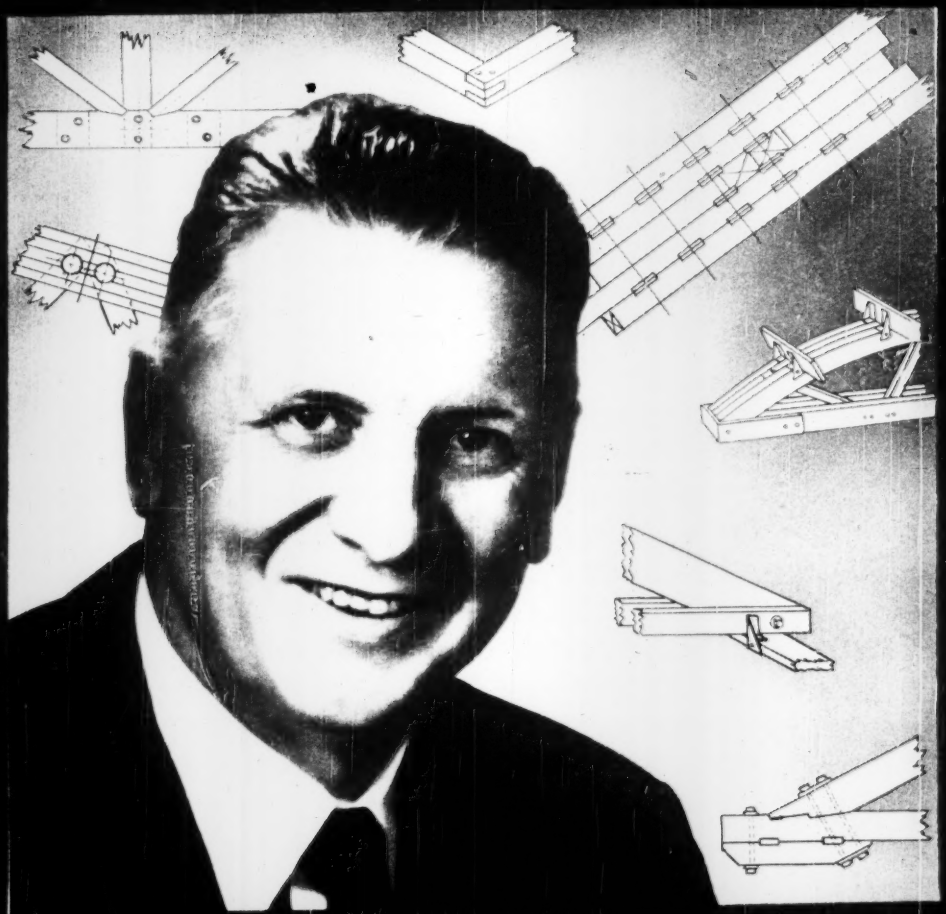
ENGINEERING NEWS-RECORD



A McGRAW-HILL PUBLICATION

THESE ATTRACTIVE RAILINGS SAFEGUARD TRAFFIC—AND BYERS WROUGHT IRON SAFEGUARDS THE RAILINGS!

This view of the K Street Elevated Highway, Washington, D. C., shows what designers can do to make railings attractive as well as practical—and the specifications show what designers can do to make railings durable. Harrington & Cortelyou, the engineers, specified wrought iron for the project. Byers 4-in. Wrought Iron pipe was installed for the railings by the general contractors, Alexander & Repass. As a further safeguard, Byers Wrought Iron 8-in. pipe was installed for the rain leaders; one is shown in the smaller illustration.

This job is typical of the new approach to the problem of bridge railings, which has been gaining in favor for over a decade. The old designs, which masked the view as completely as if motorists were traveling through a tunnel, have been abandoned for new designs which give full visibility. The old materials, which depended on frequent and periodic painting and maintenance for protection have been supplanted by Byers Wrought Iron, which is inherently resistive to corrosion. If, for any cause, the scheduled painting must be deferred, the life of these wrought iron railings is not threatened.

There is a very definite reason why wrought iron endures in these applications. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and disperse corrosive attack, and so discourage pitting. The fibers also anchor the initial protective scale, which shields the underlying metal.

You will find several interesting railing treatments developed from standard Byers Wrought Iron tubular and hot rolled shapes in our bulletin, WROUGHT IRON FOR BRIDGE CONSTRUCTION. You will also find some other applications for the material which help to safeguard bridges against premature repairs and excessive maintenance. We will be glad to send you a copy on request.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.

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ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

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SURE-GRIP
tops for drive-wheel traction on graders and pans.

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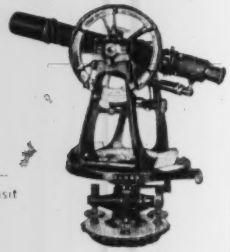

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ENGINEERING NEWS-RECORD

Volume 145 JULY 6, 1950 No. 1

WALTER G. BOWMAN
Editor

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makes four for Poirier & McLane Corp. New York, N. Y.

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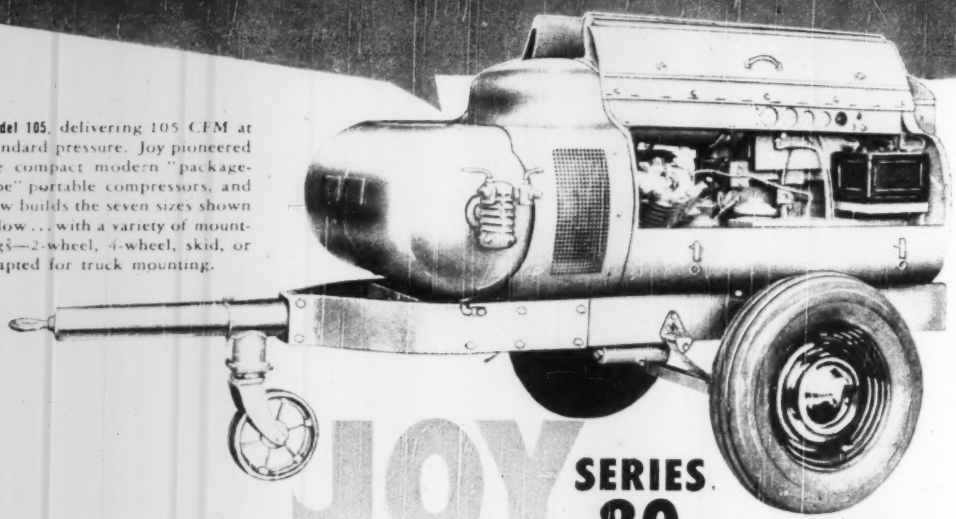

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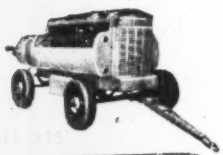

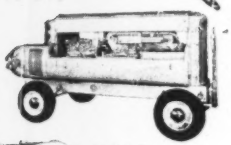

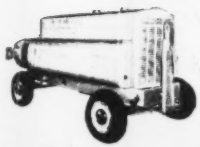

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

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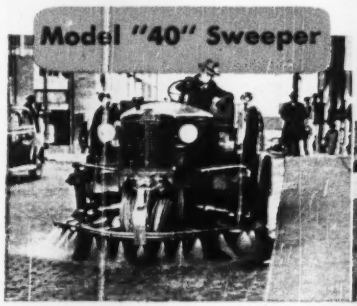
Crushing, Screening and Washing Plants

PORTABLE . . . STATIONARY

The AUSTIN-WESTERN LINE includes Jaw Crushers and Roll Crushers in a wide range of sizes; plus matching screens, elevators, conveyors and bins. Exclusive features increase output, and reduce maintenance costs.

Skilled engineering characterizes each and every Austin-Western crushing, screening and washing plant, which is tailor-made for a particular production problem. We would welcome the opportunity to discuss yours.

Model "40" Sweeper



Fast, maneuverable and economical. Dirt is thrown directly into the 2-yard hopper. Right-hand or left-hand gutter broom, or both.

Road Rollers

3-WHEELED . . . TANDEM

3-WHEELED ROLLERS with hydraulic scarifiers. TANDEM ROLLERS of the variable weight type. All with gas or diesel engines.

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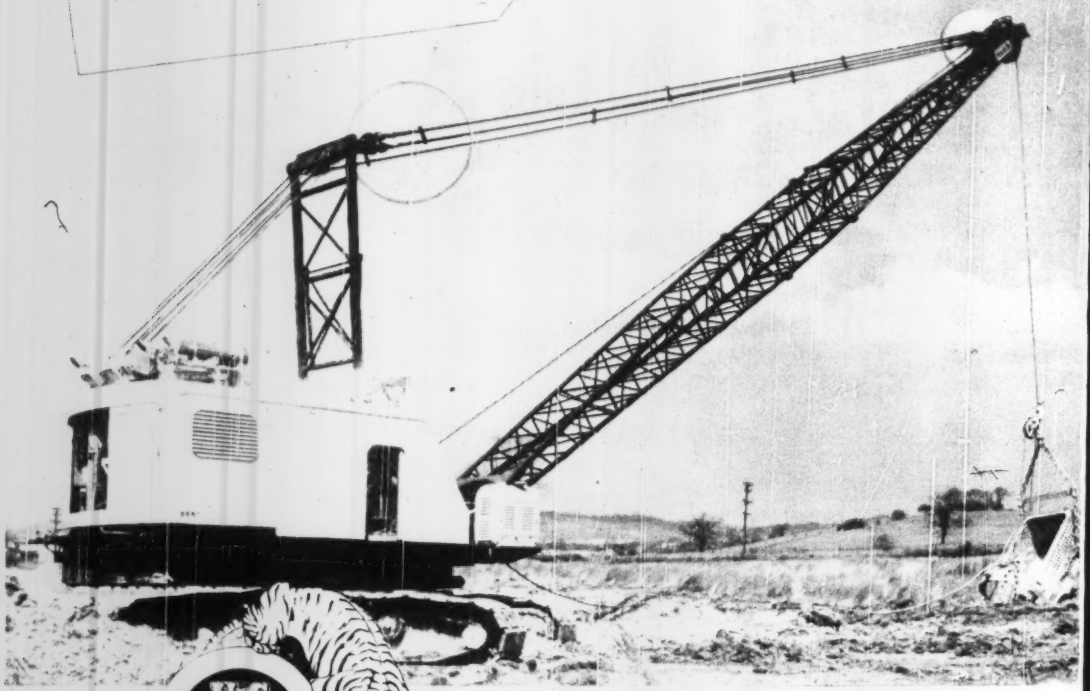
REPLACE YOUR OLD BOOM SUPPORTS with these new Tiger Brand FATIGUE-RESISTANT Boom Support Assemblies. Field tests and laboratory vibration tests indicate at least two or three times the usual length of life under the most severe vibration conditions.



NEW TIGER BRAND FATIGUE-RESISTANT BOOM SUPPORT ASSEMBLIES on a 5 cu. yd. dragline near Pittsburgh, Pa.

USS AMERICAN TIGER BRAND WIRE ROPE UNITED STATES STEEL

life for boom supports

Tiger Brand Cable Assemblies

● Here is an "innovation" in boom support assemblies that effectively combats the most severe vibration on power shovels, draglines and cranes. Notice the novel thimble design which embodies an interwoven eye and open end pendant easily and quickly interchangeable on standard equipment.

This new design dampens vibration instead of concentrating it at one point. The result is two to three times longer life for boom supports and much greater safety.

The new boom supports are especially adaptable to installations where fatigue failures occur adjacent to sockets. They can be easily and quickly adapted to your present equipment because essential dimensions such as pin diameters, distances between ears, etc., are the same as for standard open and closed sockets.

Fatigue-Resistant Boom Supports are an exclusive development of American Steel & Wire Company. Send the coupon for complete information.

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Excellay Preformed

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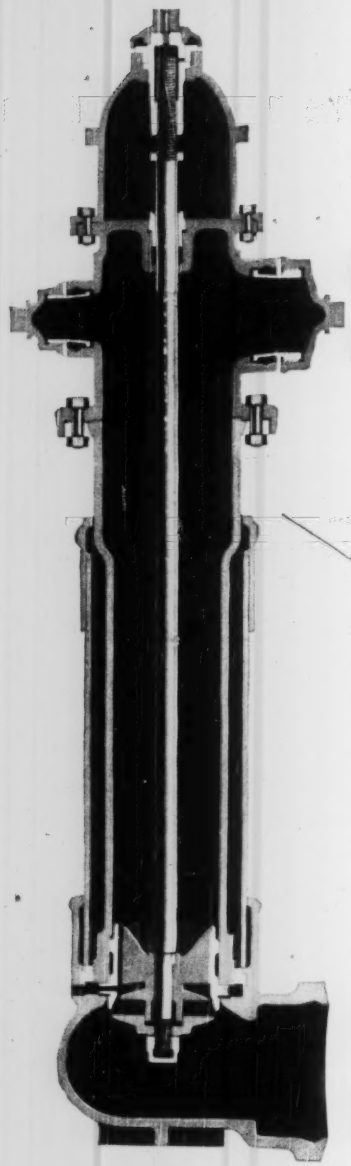
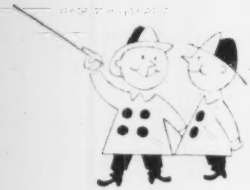


FEWER WORKING PARTS MEAN GREATER DEPENDABILITY



The simplicity of construction of Mathews Modernized Hydrants is an important factor in their length of service. There are Mathews Hydrants in operation today that were installed over 70 years ago.

MATHEWS HYDRANTS

Made by R. D. Wood Company

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

MATHEWS MODERNIZED HYDRANTS SET THE PACE: All working parts contained in replaceable barrel • Stuffing box cast integral with nozzle section • Head can be turned 360° • Replaceable head • Nozzle sections easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand Spun" cast iron for extra strength, toughness, elasticity • Operating thread only part to be lubricated • A modern barrel makes an old Mathews good as new

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Raymond MAKES 5 TYPES OF CONCRETE PILES

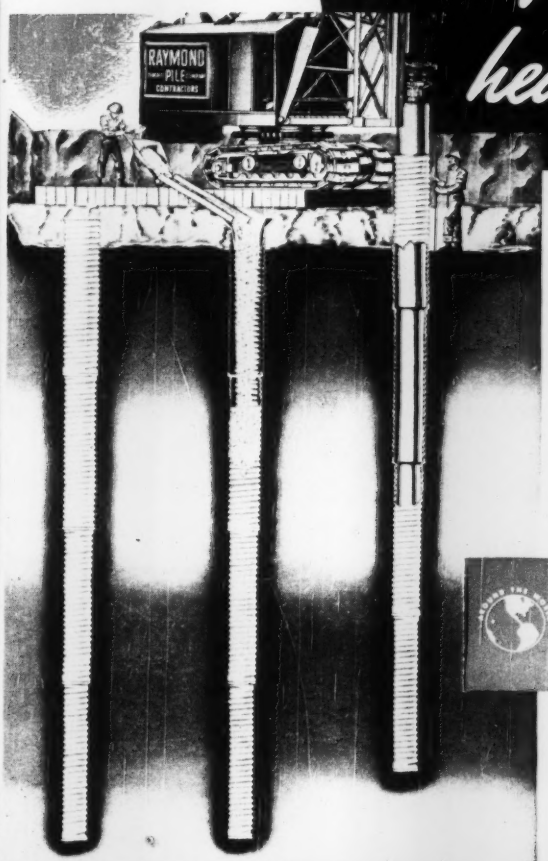
1. STANDARD . . . 2. STEP-TAPER . . . 3. PIPE STEP-TAPER

4. COMPOSITE . . . 5. GOW CAISSONS

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

2. STEP-TAPER PILES FOR *long lengths* WITH *heavy loads*

At left, completed Step-Taper Pile. Center, filling the permanent steel shell with concrete after internal inspection. Right, drilling the pile with rigid core.



Raymond Step-Taper Concrete Piles driven with rigid steel cores and heavy hammers are designed to develop high load-carrying capacities at depths to 80 feet. The permanent steel shell maintains the resistance developed during driving. After the shell is inspected internally, it is filled with concrete and cut off at the specified elevation.

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◀ RAYMOND PILES MAINTAIN DRIVING RESISTANCE

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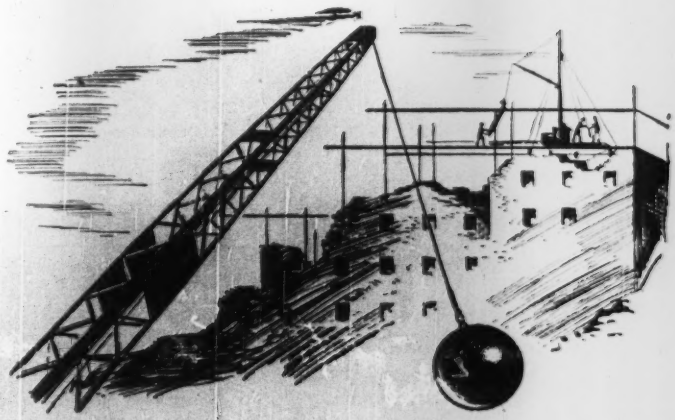
Roebling Preformed Long Lay "Blue Center" Steel Wire Rope lasts longer; brings fewer shut-downs; cuts down replacement time; saves wire rope dollars



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YEAR BY YEAR, industry makes new and more stringent demands upon wire rope . . . and Roebling leads in developing types that meet these demands with utmost efficiency and economy.

Take Roebling Preformed "Blue Center" Wire Rope with Independent Wire Rope Core!

No finer rope has ever been made, and its basis is "Blue Center" steel—an exclusive Roebling development. Its high resistance to abrasion, crushing and fatigue spells long life . . . To this, Roebling *Preforming* brings the full line of advantages of new handling ease and improved performance . . . And the addition of I.W.R.C. assures top resistance to operating pressures and provides increased rope strength.

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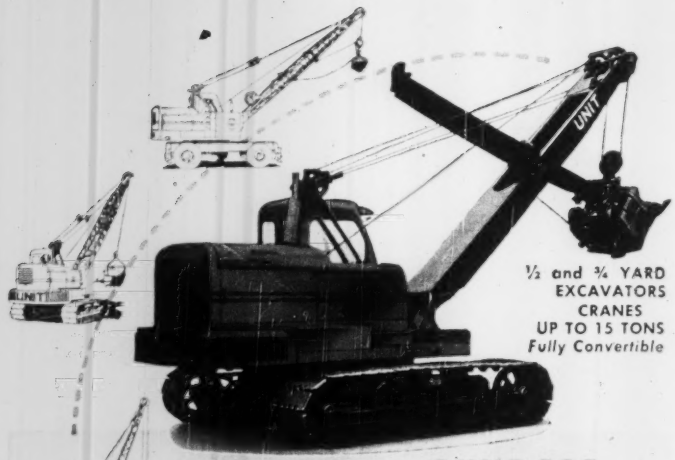

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UP TO 15 TONS
Fully Convertible

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Mobile and Crawler Models Available

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FULL VISION CAB for GREATER SAFETY

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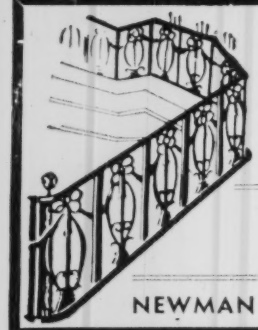
SHOVELS • DRAGLINES • CLAMSHELLS
CRANES • TRENCHOES • MAGNETS



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NEWS BRIEFS

Light Sentence—A Chicago court has prohibited the driving of piles at night on a $12,000,000 research hospital job, for the VA, on Chicago's north side. The company said it worked "round-the-clock because it had to finish the 17-story structure in 650 working days. The judge suspended a $200 fine on a promise that no more piles would be driven at night.

Any Room for Motorists?—Pennsylvania awarded 255 highway construction contracts during the first five months of 1950. They call for 485 mi of road at a cost of $68,902,454. The Highway and Bridge Authority awarded 11 more during that time, calling for 33 mi of improvements at $22,585,096. And there were to be 50 more contracts let in June.

Still At It—Connecticut's Gov. Chester Bowles has signed a contract authorizing a $60,000 survey of the New London-Groton area as a possible site for a New England steel mill. The state's Commission on Steamship Terminals, which advanced the funds, and the New England Steel Development Corp. were parties to the contract.

Nice Try, Anyway—New Jersey's Passaic Valley Sewerage Commission thought it had something for a short time recently. It heard a report on preliminary tests of a new chemical which removed 98.4% of the bacteria contained in sludge samples from its system. It figured the new substance might enable it to bypass extensive secondary treatment facilities and save heavy investment and operating costs. But it turned out that the chemical only kills bacteria—does nothing about odor, grease, and suspended particles.

Don't Get Sick, Though—Texas has embarked on the first $6,000,000 step of a $53,000,000 state hospital building program. This step is to be completed by September, 1951. Planning now will shift to the remaining $29,000,000 worth of work.

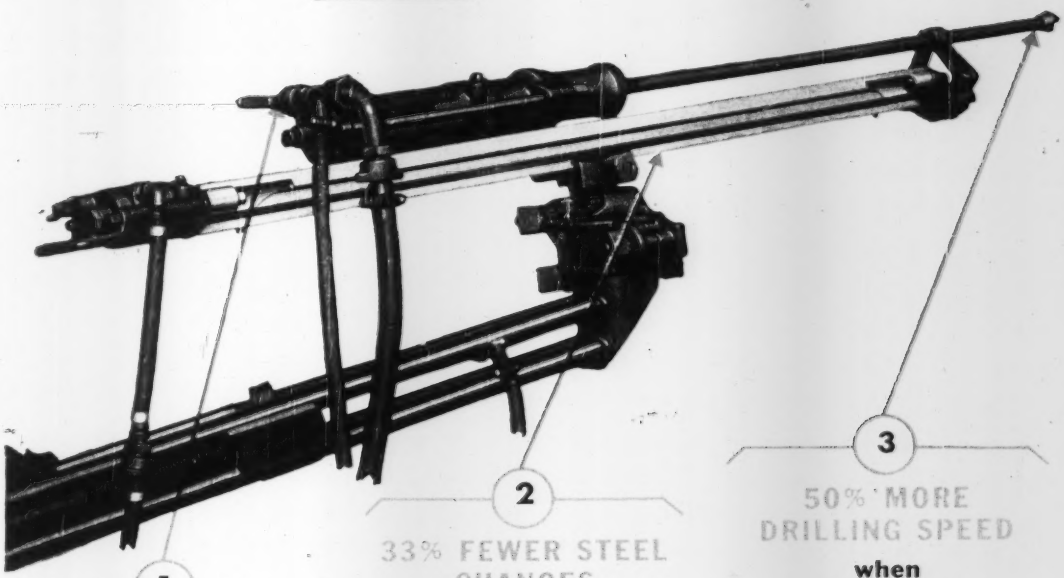
Municipal Financing Made Easy—Honolulu is spending $125,000 to create $6,500,000 worth of property. It's built dome with a seawall behind which it ultimately will fill 30 acres. The new land will adjoin an industrial midtown section. The city figures the land will be worth $5 per sq ft. Much of the rock for the seawall has come free—excavated at the site of the re-

(Continued on page 74)

THIS NEW

DB-35 DRIFTER and 48" ALUMINUM SHELL

SAVES THREE WAYS!



1

28% LESS AIR
with the NEW DB-35 Drifter

Ingersoll-Rand's new DB-35 Drifter, with the patented double-kicker port valve, has been especially designed to increase operating economy. Tests prove that this new drifter actually requires 28% less air per foot of hole drilled! What's more, the new design has resulted in stronger rotation, better hole cleaning ability and improved feeding qualities. These combined features give you a rugged, heavy-duty drifter that will even surpass the record-breaking performance of Ingersoll-Rand's famous DA-35 Drifter.

2

33% FEWER STEEL CHANGES
with the NEW Lightweight 48-inch Aluminum Shell

The greater length of this new shell permits the use of longer drill steels—with 33⅓% fewer steel changes for a given footage. Its lightweight all-aluminum construction cuts shell weight almost in half! In fact, it's even lighter than the old-style 30-inch steel shell and has equal or better life. This light weight is particularly important when drilling from a column or bar.

3

50% MORE DRILLING SPEED
when Carset Jackbits are used

These longer-wearing, faster-drilling Carset Jackbits, tipped with tungsten carbide, enable you to take *full advantage* of the potential savings offered by the new I-R drifter combination. Often drilling speeds can be increased by 50% or more, tonnage can be boosted 20% or better and dynamite requirements can be cut as much as 30%. These savings, together with the many other proved advantages of I-R Carset Jackbits, set an all-time high in economy and performance.

THIS COMBINATION is ideal for use with the famous I-R Drill Jumbo Mounting. For complete information check with your nearest Ingersoll-Rand office today. Let our engineers tell you more about this new cost-cutting combination.

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ROCK DRILLS • COMPRESSORS • AIR TOOLS • TURBO-BLOWERS
CONDENSERS • CENTRIFUGAL PUMPS • OIL & GAS ENGINES

CARSET JACKBIT

(Continued from page 12)

cently completed "pinchdown" of National Memorial Cemetery of the Pacific.

Fish Story?—A company has been formed to build and operate what is described as the world's first ocean-going natural gas pipeline. It'll handle gas from Gulf of Mexico tidelands. Marine Gathering Co. will build the line from water's edge in Vermilion Parish, La., 10 mi out to sea to the Pure Oil Co.'s drilling platform. It's to be an 8⅝-in. dia line with a daily capacity of 50,000,000 cu ft. It's to be finished late this fall, be in a ditch below the ocean floor and be given special salt-water-protective treatment.

Have a Drink—New York State's Water Power and Control Commission has ok'd an application by the Latham Water District for a 1.4-billion gal reservoir on Stoney Creek in Clifton Park. Cost is estimated at $1,025,000.

Not in Boston—Plans and estimates for a 1,400-ft traffic tunnel through Bunker Hill have been ordered by Los Angeles' city council. Preliminary plans call for either three or four lanes, although parallel existing tunnels have two. It would cost about $5,000,000, including a viaduct on the west to connect with the New Harbor Freeway.

WATER BOY... *1950 Model*

When it comes to handling water, you can depend on Naylor Pipe to do a better job.

Naylor's light weight makes it easier to handle and install. The extra strength of Naylor's exclusive Lockseam Spiralweld structure makes it safer and tougher—superior to ordinary lightweight pipe for the rough going on construction jobs.

Another Naylor feature on the water project illustrated here is the use of Naylor Wedge-Lock Couplings which contractors have found to be the fastest and easiest method of connecting pipe.

Look into this combination of pipe and couplings for your jobs whether they require water lines, "high" air lines, sanitating lines, cement pumping pipe, dredging, hydraulic sluicing, sand and gravel conveying, and other service calling for pipe from 4" to 30" in diameter.

Write for Catalog No. 44

NAYLOR PIPE COMPANY
1248 East 92nd Street, Chicago 19, Illinois
New York Office: 350 Madison Avenue, New York 17, N. Y.

THE COVER

The distance between one of the world's great testing laboratories for research into wood and its uses and the presidency of the top society for testing and standardization of materials generally isn't a long step for L. J. Markwardt.

Seated last week as president of the American Society for Testing Materials, Markwardt has long been associated with wood engineering research. He joined the U. S. Forest Products Laboratory in 1947, and is now its assistant director.

A civil engineering graduate of the University of Wisconsin (1912), Markwardt served as assistant city engineer of Madison, and later joined the engineering faculty of the university. During the last war, he served (among other things) as a member of an aircraft mission concerned with information on design and construction practises in the wood and plastic fields, and directed the laboratory's greatly expanded engineering program for the armed services.

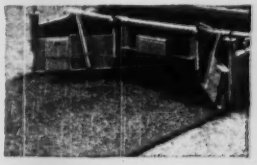
His work has not been entirely with wood. He is co-author of a book on descriptive geometry, and author of many technical papers on other engineering subjects.

JAEGER paver-type AGGREGATE SPREADER

the low-cost, accurate, self-propelled spreader you've been looking for

ALL TRACTION ON SUBGRADE or compacted course. No displacing of loose material. 4-wheel drive.

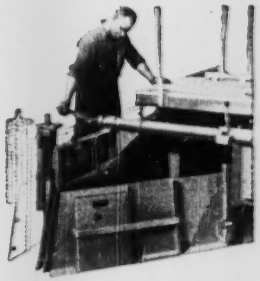
STRAIGHTEDGE RUNNERS carry screed independent of rest of machine, average out subgrade irregularity, insure accurate lay.



LAYS MANY MATERIALS: The Jaeger is adaptable for free-flowing bituminous mixes as well as all aggregates up to 4" stone.

UP TO 25' IN TANDEM: Use 2 low-cost spreaders to lay and roll full-width base. Keep your costlier paver busy on top course.

BLENDS PERFECT JOINTS: Side control gates furnish material for blender wings to form joint. Saves hand work.



QUICK WIDTH CHANGES, 10' to 12½' by simply cranking telescopic shaft, adding screed inserts. Block off for 8' to 10' widths.

ALL AGGREGATES, both base and surface, plant-mixed stabilized soil and free-flowing bituminous mixtures — up to 10" thickness, 8' to 12½' widths. Lays big daily tonnage, to correct course thickness —yet is low in cost.

Contractors, highway engineers, send for new Bulletin SPS-9.

JAEGER BITUMINOUS PAVER "Teams" with the Jaeger Aggregate Spreader: America's most advanced precision paver for all types of bituminous material. Oscillating tiltable screeds, almost instant width adjustability up to 12½', positive automatic leveling. Paves flush to curbs, gutters. All traction and heavy load confined to subgrade. Ask for Catalog BP-9.

CONCRETE PAVING CONTRACTORS: Get labor-saving mass-production with Jaeger Diagonal-Screed Finisher and Screw Spreader "Team". Ask for catalog.

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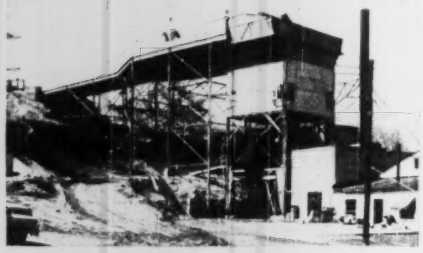
JAEGER

engineered equipment

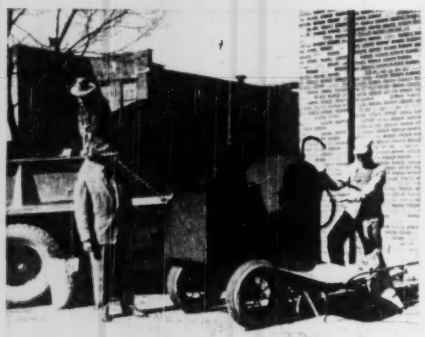
PUMPS • AIR COMPRESSORS • MIXERS

BLUE BRUTE USERS AGREE:

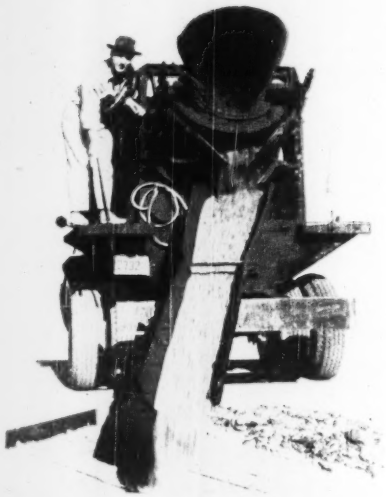
"It's a Great Line of Mixers!"



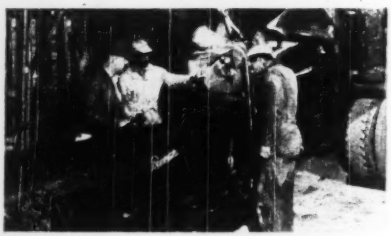
FOR CENTRAL MIXING This modern plant of the Clark Certified Concrete Company, Inc., of Baltimore, Md., produced 125,000 yds. of pre-mixed concrete during the past year. Vice-President Duncan writes: **"Your Blue Brute 84-S Stationary Mixer has proven entirely satisfactory. Maintenance costs have been practically nothing."**



FOR PORTABLE MIXING. Le Roy W. Vival, chief engineer of the O'Sullivan Rubber Corporation, Winchester, Va., reports: **"We are extremely gratified by our Blue Brute 3½S Tilting Mixer, which has had two years of constant, severe use. It is extremely mobile, well constructed and performs excellently. Long exposure has not decreased its efficiency. The mixing cycle is fast and the mix consistently uniform. It is a pleasure to endorse and recommend this equipment."**



FOR TRANSIT MIXING. President Bob McCorkle of the Abilene, Texas, Concrete Company, gives his reasons for re-ordering Blue Brute Hi-Up Truck Mixers: **"We have compared competitive makes on our jobs and find your Hi-Ups best in every way. Maintenance costs have been negligible. Just purchased your first chain-drive Hi-Up and find it even better than the older machines — faster charging and discharging, easier to maintain and smoother running."**



FOR PLACING. In building the Washburn vehicular tunnel under the Houston, Texas, ship channel, the "Trench method" of construction was used. The last yard or two of concrete placed in each of the section joints had to be placed *straight upwards* — a tricky pouring problem. Merritt-Chapman & Scott Corporation reports **an easy solution was found with the aid of a Blue Brute Pneumatic Placer, which performed excellently.**

Yes, among Blue Brute owners it's a never-ending story of more concrete at lower cost, trouble-free operation, time and money saved in every detail of mixing operations. Why not look into this proof that *there's more worth in Worthington?* See your nearby Worthington-Blue Brute Distributor, or write for bulletins on mixer types in which you're interested.

NATIONAL READY MIXED CONCRETE ASSOCIATION NRMCA

Worthington Pump and Machinery Corporation
Construction Equipment Department
Harrison, New Jersey

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BUY BLUE BRUTES

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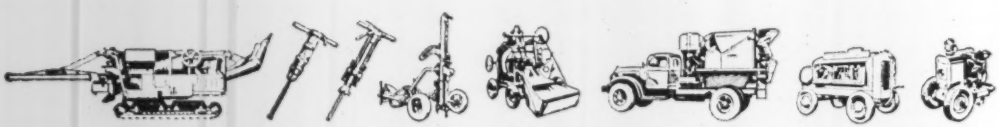
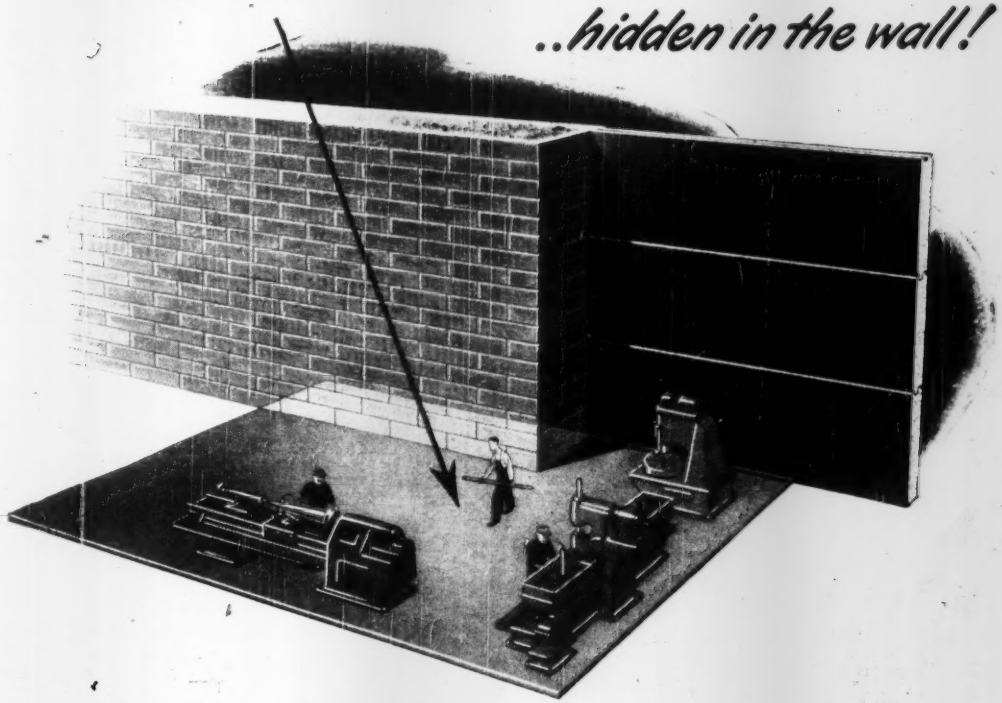


IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

FOUND 602 sq. ft. of floor space ..hidden in the wall!



It was a small plant Mr. Williams was building—150' x 250'. Instead of the usual 12" thick wall of brick, an alert young engineer suggested the new 3"-thick, insulated Fenestra* "C" Panels he'd heard so much about. Same function . . . same insulating value . . . same outside building dimensions. But *inside*—602 sq. ft. more floor space than he'd have had with the old-style wall. Floor area equal to a 20' x 30' room.

He also discovered:

That the installation speed of these panels cut construction costs . . . helped get equipment under cover quickly.

That they are lightweight, strong . . . reducing requirements for structural steel.

That they are noncombustible.

That they are good-looking and so smooth that dirt and grease can't get a grip.

And he *will* discover, when he wants to expand, that they are easily dismantled, moved and reinstalled.

Fenestra Insulated "C" Panels are standardized 3" deep, 16" wide, 18 gage painted steel or 16 B&S gage aluminum, 6' to 14' in length. Those of steel weigh only 6.50 lbs. per sq. ft. Aluminum, 5 lbs. Two formed members, joined to form a structural unit. Asphaltic impregnated felt inside full length of the joints to prevent metal-to-metal contact. Vapor sealed, with felt stripping between formed sides and end closures. Double tongue and groove joints make a wall of "C" Panels an integral load-bearing unit. 3 positive bearing surfaces per panel for easy erection. Smooth surface permits easy flashing details.

Check into Fenestra "C" Panels right away . . . they save you time, money and *won't* waste floor space.

Mail the coupon, or have one of our engineering representatives call. Also ask about "D" Panels for floors and ceilings, and Holorib Roof Deck. *Trademark

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Panels · Windows · Doors

"Use Our 25 Years' Experience in Metal Panel Engineering"

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Please send me, without obligation, information on Fenestra Building Panels.

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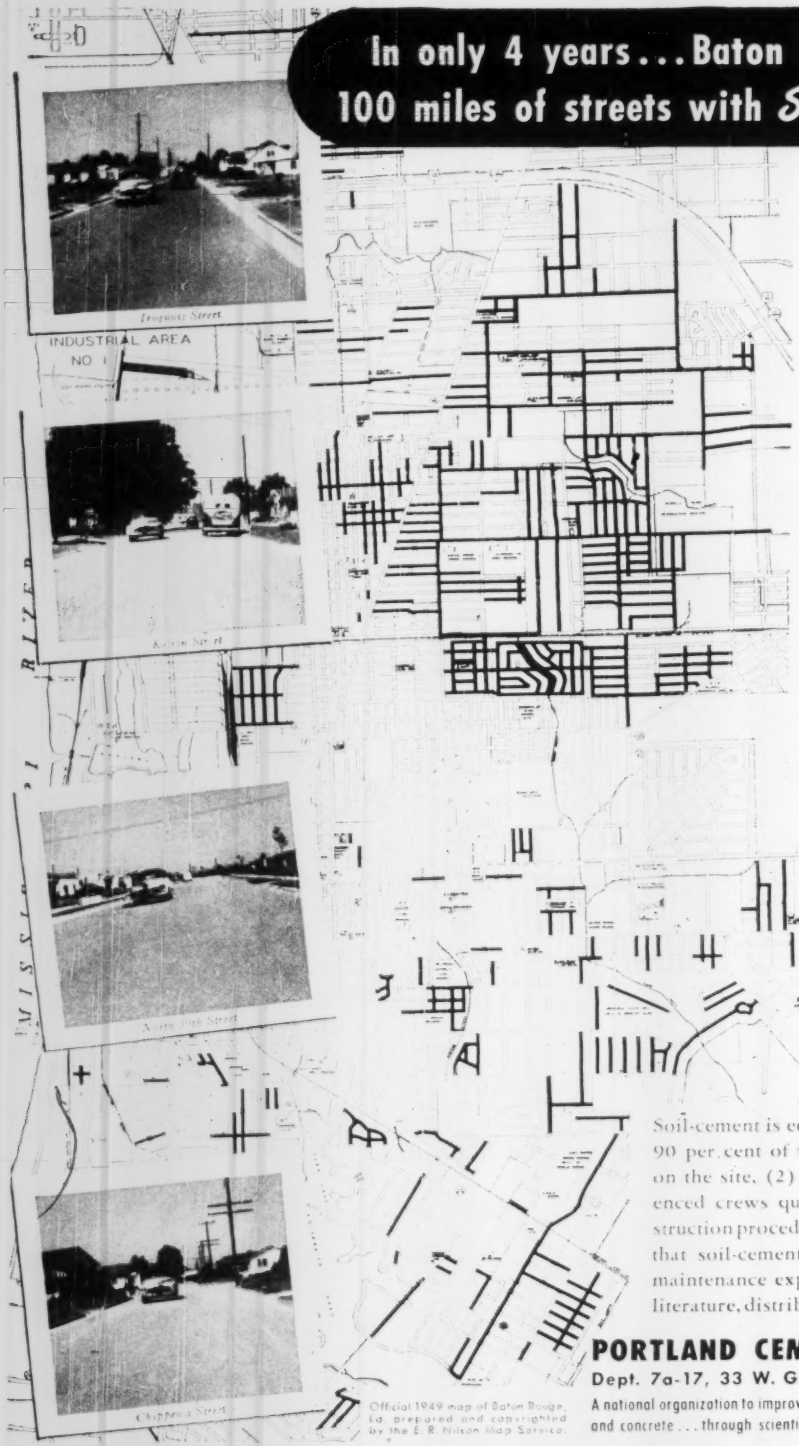
In only 4 years... Baton Rouge paves 100 miles of streets with *SOIL-CEMENT*



Official 1949 map of Baton Rouge, La. prepared and copyrighted by the E. R. Hilson Map Service.

IN EACH of the last four years (1946 through 1949) Baton Rouge, La. has led all cities in the U.S. in soil-cement paving. During that time the city paved more than 1,000,000 sq. yd., or about 100 miles of streets, with low-cost, durable soil-cement.

The heavy black lines on the map show where these soil-cement streets are. The pictures superimposed on this map are typical streets in this tremendous soil-cement paving program.

Like Baton Rouge, cities, counties and states across the nation are finding that soil-cement is the economical way to get dependable, all-weather pavement on light-traffic roads and streets.

Soil-cement is economical because (1) about 90 per cent of the required material is soil on the site, (2) paving is fast, (3) inexperienced crews quickly learn the simple construction procedures. Published records show that soil-cement gives long service at low maintenance expense. Write for informative literature, distributed only in U.S. and Canada.

PORTLAND CEMENT ASSOCIATION

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A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

THE CONSTRUCTION WEEK

FREE VS FEE—Governor Thomas E. Dewey's plan for a rather complicated system of toll-charges on New York's Thruway (ENR March 9, p 21) is going to come in for some hot and heavy fighting. The Automobile Club of New York (231,500 members) through its president, W. J. Gottlieb, pledged an "all-out" fight against any such charges. Said Gottlieb: "There are many sound reasons for believing that the Thruway cannot be put on a self-supporting basis by license fees on users. . . . We are unalterably opposed to financing the Thruway by tolls as long as special taxes on motorists are diverted to non-highway purposes."

WAGES STILL UPGRADING—The trend is still up in wages: It is fed by the General Motors four-cent increase and the cost-of-living escalator in that contract. The latest Bureau of Labor Statistics price index of 168.6 means a 2-cent raise in September (if there's no drop before then). The first real sign of the size of any fifth-round wage demands will appear when Phillip Murray reopens the Big Steel contract Jan. 1. The $22-a-month the social security law amendments cut from the industry's pension obligations will be Murray's biggest bargaining point.

ST. LAWRENCE, CONTINUED—The Administration has asked the Federal Power Commission to turn down the license application of the Power Authority of the State of New York for power development of the St. Lawrence River. The newest plea for federal—as opposed to state—development of the St. Lawrence was one factor in recent hearings (oral) before the Federal Power Commission, conducted by Mon C. Wallgren, new chairman. In a letter to the commission, Secretary of Commerce Sawyer asked the commission to concur in the findings of Presiding Examiner Glen R. Law, who last December proposed that the New York application be turned down and the federal work be recommended to Congress.

SCHEDULE NOTE—With the Korean emergency on, Washington looks for Congress to recess—not adjourn—when the time comes. That way, Congressional leaders (and not the President) can decide whether and when Congress comes back, if things get hotter.

TAX TURNS—It looks now as if there'll be a tax law this year, after all. Of course, action in the House is all that's happened so far (after several twistings and turnings by committees and subcommittees of both houses) but observers say that the bill finally tacked together is shrewdly designed to please everybody—except big corporations. The House balanced its excise tax cuts by: Corporate rate rises, which should bring in $285 million more next year; dividend withholding, which is expected to uncover up to $1 billion of taxable income now escaping; tax on insurance companies (a non-recurring item) which would make the insurance people cough up something like $166 million on income earned since 1947; and plugging up miscellaneous loopholes.

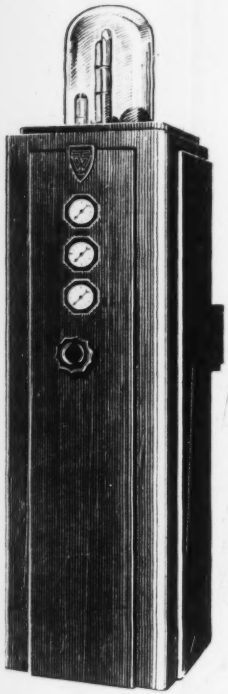
CEMENT SQUEEZE—Cement supplies are tightening in Chicago, with the biggest squeeze expected in August. Some companies already are beginning to draw on stocks to meet demand. Chicago's building boom, delayed by bad spring weather, is approaching its peak. So is highway and other heavy construction in that area. These three factors, plus production losses during the coal strike last spring, may make the cement shortage worse than the one we experienced back in 1948.

HOW UNLUCKY CAN YOU GET?—Dallas, Texas, homebuilders probably wonder what they have to do to make their point. Some months back, in an attempt to head off public housing they opposed, the homebuilders won from city council a pledge not to authorize any public housing if they'd erect at least 1,000 homes for Negroes within a year. Thus far, private builders have 1,823 units under construction, another 1,800 planned. But because there's been a wave of bombings of homes bought by Negroes in predominantly white South Dallas, council has asked the Dallas Housing Authority to build 1,000 public housing units for Negroes. It also urged private homebuilders to continue all the building they can for Negroes.

NEW EXPORT—The Air Force is shipping 2,500 construction troops of its engineer battalions to England to put three airbases into shape for U. S. bomber crew training use. Britain's Air Ministry sold the move to British labor as one necessary to avoid diversion of English labor from essential work. The job involves buildings, primarily—housing, hospitals, etc., to bring the bases to USAF standards. There'll be some lengthening and strengthening of runways, too. Each nation will pay for the work it does. British will requisition some land, relocate certain roads, etc. American troops will do all the work on the fields themselves.

WALLACE & TIERNAN CHLORINATORS are

Standouts in any Plan



AN OIL REFINERY IN TEXAS needs cooling water chlorination.

A PAPER MILL IN WISCONSIN requires white water slime control.

A SWIMMING POOL IN CALIFORNIA wants chlorination to guard against water-borne disease.

A SEWAGE PLANT IN INDIANA needs chlorination for disinfection.

A CAMP IN VERMONT wants to sterilize its well supply.

A POWER STATION IN FLORIDA asks for chlorination to improve heat transfer in condensers.

Whenever and wherever the plans call for chlorination, Wallace & Tiernan Equipment stands out as the first choice of engineers and architects all over the country.

The reasons for this preference aren't hard to find because smart buyers know that with Wallace & Tiernan Equipment they get:

WIDE SELECTION—Wallace & Tiernan Chlorinators and Hypochlorinators come in a variety of models and sizes handling from ounces up to 3 tons of chlorine daily.

PROVEN EQUIPMENT—Manufactured in a modern, precision-conscious plant, every piece of Wallace & Tiernan equipment is thoroughly tested (before leaving the factory) for the actual job conditions under which it will operate.

EXPERT DESIGN—All Wallace & Tiernan equipment is the product of expert development by a top notch research group specializing in chlorine and chemical control equipment. This is the same group that has pioneered such famous developments as the Visible Vacuum Principle, Break-Point Chlorination, and Residual Recording during the last 35 years.

SERVICE—Wallace & Tiernan's nationwide service organization is ready to solve bacteria-induced water treatment problems, whatever they may be.

Call your nearest Wallace & Tiernan Representative for your next job involving chlorination. He will be glad to help you.

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CHLORINE AND CHEMICAL CONTROL EQUIPMENT
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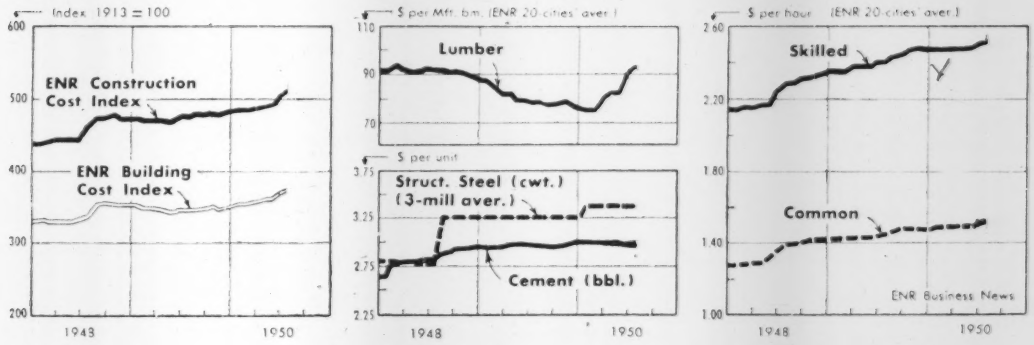
S-60

JULY CONSTRUCTION BUSINESS REPORT

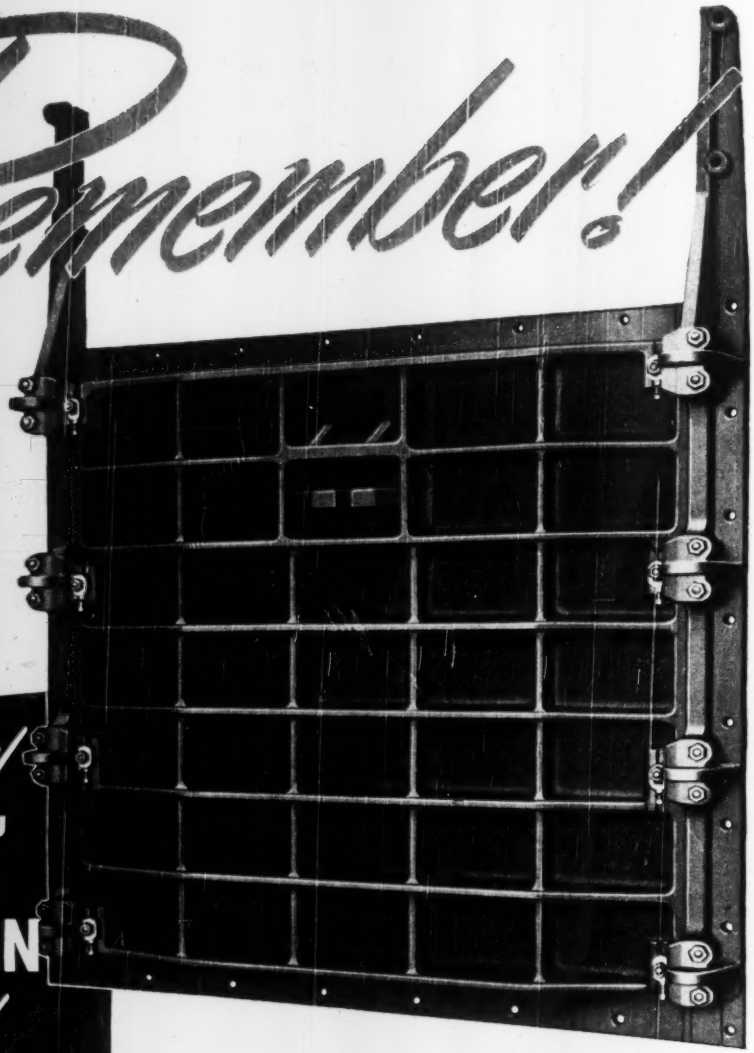


ENR INDEXES (1913 = 100)	July '50	June '50	% Change	July '49	% Change
Construction Cost	511.91	506.45	+1.2	477.46	+7.2
Building Cost	376.90	372.96	+1.1	349.39	+7.8
MATERIAL PRICES (20-cities' average)					
Cement, bulk, per bbl.	2.966	2.965	0.0	2.957	+0.3
Structural Steel, 3-mill aver., per cwt.	3.400	3.400	0.0	3.250	+4.6
Sand, per ton	1.970	1.968	+0.1	1.978	−0.4
Lumber, 2x4 Fir, per M ft. bm.	102.015	98.971	+3.1	85.073	+19.9
Lumber, 2x4 Pine, M ft. bm.	85.600	82.433	+3.8	73.446	+16.5
Common brick, per M	28.525	28.250	+0.9	27.662	+3.1
Ready-mixed concrete, per c. y.	10.265	10.333	−0.6	10.207	+0.5
Structural Clay Tile, 3x12x12 per M	133.900	132.900	+0.7	132.976	+0.6
WAGE RATES (20-cities' average)					
Common	1.538	1.528	+0.6	1.465	+4.9
Skilled (aver. 3 trades)	2.324	2.317	+0.2	2.413	+4.6
Bricklayers	2.803	2.783	+0.7	2.633	+6.4
Structural Ironworkers	2.478	2.478	0.0	2.382	+4.0
Carpenters	2.292	2.289	+0.1	2.224	+3.0

CONTRACTS AWARDED (thous.)	June 1950	June 1949	% Change	Six Months 1950	Six Months 1949	% Change
Total U. S. (ENR reported)	$1,253,720	$896,128	+39.9	$5,665,066	$3,939,969	+43.7
Private	728,064	436,740	+66.7	3,234,378	1,892,496	+70.9
Public	525,656	459,388	+14.4	2,430,688	2,047,473	+18.7
Federal	105,933	121,150	−12.5	715,813	555,094	+28.9
ENR Constr. Volume Index, '13 = 100	427	326	+30.9	380	275	+38.1
NEW CONSTRUCTION CAPITAL						
Total	699,679	464,786	+50.5	2,592,269	2,672,193	−2.9
State & Municipal Bond Sales	322,462	275,441	+17.0	1,463,776	1,395,156	+4.9
Corporate Security Sales	377,217	189,345	+99.2	1,128,493	1,277,042	−11.6
Federal (non-federal work)	.....	.....	.....	.....	.....	.....
Federal (federal work)	.....	.....	.....	.....	.....	.....

MATERIAL SHIPMENTS & LABOR SUPPLY	May (M) April (A) 1950	May (M) April (A) 1949	% Change	Five Months (5) Four Months (4) 1950	Five Months (5) Four Months (4) 1949	% Change
Cement, thous. bbls., Bu. of Mines	18,375 (A)	17,779 (A)	+3.3	52,356 (4)	50,208 (4)	+4.2
Fabr. Struc. Steel, thous. tons, AISC	157 (M)	171 (M)	−8.1	740.5	835.5	−11.3
Lumber, mil. ft. bm., NLMA	3,219 (A)	2,620 (A)	+22.8	12,060 (4)	9,279 (4)	+29.9
Lumber Prod., mil. ft. bm., NLMA	3,227 (A)	2,604 (A)	+23.9	11,168 (4)	9,541 (4)	+17.0
Contract Const. Employ., thous. BLS	2,243 (M)	2,137 (M)	+4.9	(Av.) 1,992.5	(Av.) 2,012.5	−0.9

Remember!



...the *Special* Sluice Gate you need may be a CHAPMAN *Standard*

EASY INSTALLATION!

Better check with Chapman before you order *special sluice gates.* Frequently, you'll find the gate you require is already a Chapman standard — and available at a standard price.

You'll save, too, in the easier installation of Chapman Sluice Gates — interchangeable stems and couplings require no match-marking. What's more, Chapman Gates are obtainable with any type of operating control — manual, hydraulic cylinder or motor unit. For more complete information, send for a copy of the Chapman Sluice Gate Handbook.

The Chapman Valve Mfg. Co.
INDIAN ORCHARD, MASSACHUSETTS

Basis for a Water Policy

NO MERE TOUCHING UP here and there is going to fit present federal water development practices into a sound national water policy. That is painfully evident throughout the report that the special committee of Engineers Joint Council—an organization of the five national engineering societies—has made to the President's temporary Water Resources Policy Commission in response to its request for help and suggestions.

In strong, candid language the committee spells out its opinion of what is wrong with current practices and trends. With equal definiteness it recommends what should be basic facets of a policy that would channel water resource development into a pattern that would produce the greatest benefits to the country as a whole.

This two-fisted approach is refreshing, although some of the objectivity expected of engineering reports is lost. In this connection several of the task committee reports contain recommendations that have been made repeatedly by groups distinctly and sometimes selfishly at loggerheads with various federal agencies. To that degree the report leaves itself open to attack by the federal empire builders on the ground that its high purpose is tinged with politics.

The report must be conceded, however, to represent the attitude and the opinions of the nation's engineering profession outside the federal service. Although the 80 members of the committee are outstanding specialists on water use and development, none is in the federal employ and thus representative of the viewpoint favoring centralization of authority and planning in Washington. On the other hand at least 25 of the committee members have had previous experience in the federal service and thus are peculiarly aware of those aspects of water development that are haphazard and uneconomic, which is indeed also the case with many conscientious public servants.

What should be the elements of a sound water policy? They are many and varied, as the committee points out, but a few basic ones illuminate the general pattern suggested—and emphasize a clash with many current practices.

According to the report a national water policy should require that project evaluations be made on the basis of clearly stated and logically derived estimates of benefits and costs, devoid of political expediency and exaggeration; that development, wherever feasible, be by local enterprise—governmental or private; that immediate beneficiaries should shoulder a fair share of the costs; and that all details of subsidies, for whatever purpose, including social change, should be clearly stated and regularly reported on.

Extension of these fundamentals to such water uses as navigation, irrigation and hydro power results in these definite committee recommendations: The use of inland waterways to force reductions in rates of competing land transportation should be abandoned. Justification of irrigation projects should be based solely on the relationship between costs to be incurred and tangible values actually to be created. And local enterprise should not merely be encouraged, but should have priority to develop hydro power under proper governmental control and regulation. All these are potent reminders of practices that have grown up without definite sanction or careful analysis from a public interest viewpoint.

To implement a uniform water policy and to alleviate and control competition between federal agencies, a board of impartial analysis and appraisal should be set up. In this recommendation the EJC committee parallels one made by the Hoover Commission, and also in editorials in these pages earlier than that.

In rendering a report in such a short time—less than six months—the committee members have performed an outstanding public service at considerable personal sacrifice. In making it so clear and unequivocal they have given the President's Water Resources Policy Commission a working paper of great value. It is to be hoped that the report will receive the considerate and careful attention and study that it rightly deserves.

Training Highway Engineers

Ohio has undertaken to meet the shortage of highway engineers by a stepped up training program (ENR May 11, p. 33). Key elements are starting salary of $264 a month for new graduates and a promised increase to $345 when the trainee gets his professional license. This is a much better starting rate than was offered to beginners in the past, plus reasonable assurance of a substantial raise.

As is common to most such training programs, the trainees are to be assigned to work in all major divisions of the highway department. The desirability of doing that cannot be too strongly emphasized. Under the plan as now set up in Ohio, however, there will be a new challenge to the division heads to provide jobs with enough responsibility to meet license requirements. A corollary benefit will be that trainees, pushed into a job with considerable responsibility, will be placed in a sink-or-swim position, which is one of the best ways to bring out a young man's capabilities quickly.

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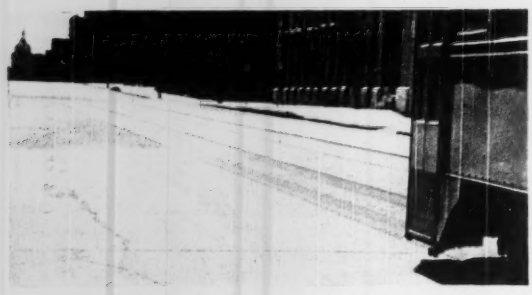

Ten Years Ago...

A Product of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown just as they appeared in July, 1949—convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

Today... It's DURAPLASTIC* for more durable structures

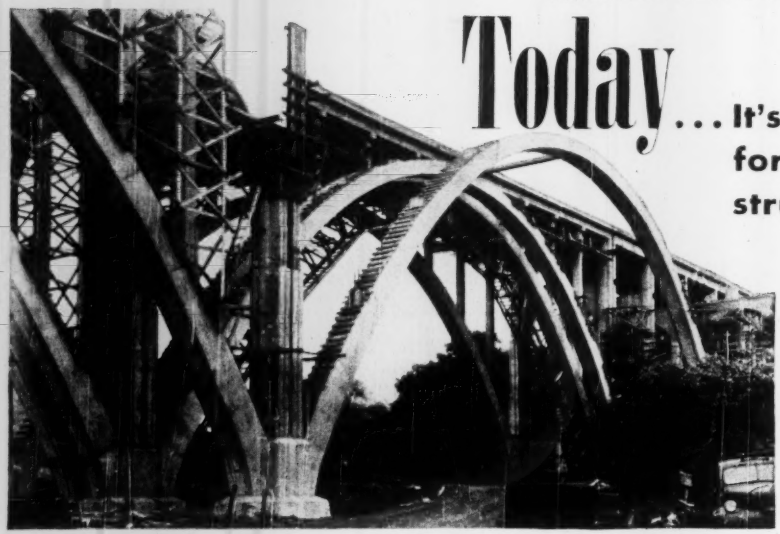

Photo taken during construction of three-span bridge on Penn-Lincoln Highway. Spans for bridge and paving and underpasses made with Atlas Duraplastic. Designed by Pennsylvania Dept. of Highways. Contractor: Dinardo, Inc., Pittsburgh, Pa.

From the first paving test installation to this tremendous three-span bridge, Atlas Duraplastic air-entraining portland cement has demonstrated both its added durability in countless paving jobs and its improved appearance in structural uses.

In its rapid ten-year growth, Duraplastic's advantages have been applied to all types of mass and structural concrete — for foundations, walls, columns, and floors. It's ideal for slip-form, gunite, stucco and similar uses.

With Duraplastic, less mixing water is needed for a given slump. The resulting mix is more plastic, more uniform and more cohesive. It's easy to place and finish. Water-gain and segregation are reduced. Surface appearance is improved and the concrete has higher resistance to effects of weather-exposure.

For structural concrete needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost*. It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications, sells at the same price as regular cement and calls for no unusual charges in procedure. For further information write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

• • •

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

*"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

ENR D-97

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ENGINEERING NEWS-RECORD

JULY 6, 1950 VOL. 145 NO. 1

EJC scores U.S. water policy inequities

Engineers Joint Council report is critical, recommends changes

United States water development policy would be thoroughly revised if recommendations made by the Engineers Joint Council this week were followed.

These recommendations came in a searching report by EJC's Water Policy Panel. The report went this week to President Truman's Water Resources Policy Commission, established last winter. (ENR Jan. 12, p 29). EJC is one of more than 150 groups—educational, trade and professional—asked to submit its recommendations.

There was sharp criticism of existing federal policy—or the lack of it—throughout the EJC document. And it was studded with recommendations which have been made through the years by various groups—from outright lobbies to the Hoover Commission.

EJC's panel of more than 80 experts contained no direct federal representation, as a matter of policy. However, about one-third of its membership has had experience working directly with and for federal water development agencies.

• **No one's to blame**—Despite the blunt nature of many of its findings and proposals, EJC's report was careful not to blame any agency or group for the existing "chaotic situation in which the country now finds itself." EJC noted that both political parties "respond almost unanimously to pressure and trading" involved in federal water development legislation.

Considering the deeply controversial nature of many of the topics examined and recommendations made, the panel's Coordinating Committee spoke with reserve when it said, of its Task Force reports, that:

"Naturally, not all members of each committee subscribe to all points and comments in committee statements. It is highly gratifying, however, to record that no single committee submitted a report in which major principles were not concurred in by all of the signatories."

General recommendations by the

(Continued on page 26)

EJC's policies governing water study

These are summaries of the policies generally applicable to federal water resource development which were established for guidance of the EJC Task committees surveying various water development fields.

General Policy—That policy which is generally applicable should be prescribed for all federal water resource development and for all agencies performing it.

Financing—It should be as local in character—whether public or private—as may be feasible.

Study and Planning—Today's rate of federal project planning and authorizing is excessive and unsound. Time enough must be taken to get the facts and determine the need. Spending should be lower in prosperity, higher in slumps.

Benefits—These should be expressed in an average annual dollar yield. They must exceed—by function—the alternative cost of that function. Alternative cost should be figured by individual functions.

Subsidy—Those who receive the benefits should pay for them—to the greatest extent feasible. Where subsidy exists, it should be disclosed completely, from first reports to annual operating statements.

Costs—These should be accounted for thoroughly. Estimates must be realistic. All interest cost should be included.

Taxes—Water development costs should include all tax equivalents. Tax payments should continue on lands acquired for these projects. Federal revenue-producing projects should be required to pay state and federal income and excise taxes or their equivalents.

Cost Allocation—Distribution of costs in proportion to benefits is improper. Allocations of capital costs among joint facilities should be made by the Proportionate-Use-of-Capacity Method.

Justification—No project should be undertaken which is not economically feasible. All functions should be justified by all agencies on the basis of established standards. Reappraisals should be made from time to time—by functions in multi-purpose projects.

Benefit-to-Cost Ratios—These ratios should be not less than 4 to 3 favoring tangible benefits in computations made as recommended by the committee. Where factors can't be estimated closely or benefits are long delayed, the ratio should be not less than 2 to 1.

Project vs Basin Justification—Individual projects should be subject to standard criteria of justification in all cases except where two or more are physically and of absolute necessity interdependent.

Authorization—This should come solely from Congress—by individual projects. Approval should not be in blanket form; should constitute an absolute limit on appropriations; should be Congressionally reviewed with each substantial change in the project; and should become void if costs exceed authorization estimates by 20%. No new projects should be authorized until a national policy has been adopted.

Operation and Amortization Expense—Federal projects should be self-supporting and, as far as practical, self-liquidating. Amortization should be on a straight-line basis in not more than 50 years. All project income should go into the Treasury—for disbursement only by appropriation. Accounting should be uniform for all functions.

Priorities—Except as to uses affecting interstate commerce, determination of water-use priorities should not be primarily a federal function. Not all existing interstate uses are beyond question. In not all land utilization cases should water development uses get priority. Groundwater resources need full consideration.

Impartial Analysis—A board to review and analyze projects impartially should be created. Its reviews and reports should be a prerequisite to Congressional authorization or appropriation.

EJC scores U.S. water policy

(Continued from page 25)

Coordinating Committee were substantially these:

Water development is a national interest, not necessarily a federal one. What can be done locally should be so performed. Federal performance should be confined to what's necessary and what requires action by all the people. And such collective action is justified only for the following purposes:

1. National defense—or for substantial benefit to all citizens.

2. As an aid to financing works of benefit to a few on terms equitable to all.

• **No punches pulled**—Many of the specific policies which the Coordinating Committee held generally applicable to all federal-water development fly directly in the face of existing practice, existing law or existing tradition. As such, much of the report is bound to be unacceptable to many federal agencies.

Considering the background of some members of the Water Resources Policy Commission—and the fact that its staff is recruited from federal agencies responsible for water development—EJC's report is bound to hit with a thump on those who solicited and will evaluate it.

For instance EJC reiterates throughout that whatever can be done locally be so performed. Just as one example, that's directly opposite to the history of California's Central Valley project, one of the most tremendous of all water development programs. That program began under state auspices. It became a federal undertaking about 15 years ago and has grown more vast since that time.

Also, EJC wants a dollar sign tied to every benefit considered in the justification of a project. Actually, the trend in Washington is an opposite one. As cheap projects are built, only those more expensive remain.

To justify under existing requirements these more expensive projects, more and more benefits must be found. One device is the Reclamation Bureau's "basin account," a device which EJC flatly and specifically spurns.

It is easy enough to put a dollar value on a project's hydroelectric energy output. It is a little harder to tie a dollar sign on a fish.

• **Taxes should be paid**—EJC wants to charge to federal water developments those taxes such a project would face were it in private hands. This is an issue that has been fought violently between protagonists of public and private power ownership—without any visible success on the part of those who would tax federal power. Even the tax-equivalent payments called for by the Tennessee Valley Authority Act are confined to that act—and those are far less extensive than those called for by EJC.

EJC suggests that projects should have to meet at least a 4 to 3 benefits-to-cost ratio—in some cases a 2 to 1 ratio. Numerous projects are authorized today which barely exceed the traditional 1 to 1 ratio—with intangibles included in achieving the 1 to 1 level. But EJC wants no intangibles in arriving at the ratios it proposes.

There are numerous other points of direct conflict between EJC's recommendations and existing practice. Thus, there are numerous other opportunities for conflict between agencies with a vested interest in existing practice and non-federal groups such as EJC, its constituent societies—and even the employers of various members of EJC's Water Panel, its committees and its Task Forces.

Delicate as it may be, federal agencies are bound to comment—privately if not publicly—on some of EJC's survey personnel. Part of this comment will arise from EJC's decision not to include federal engineers on its panel or working committees.

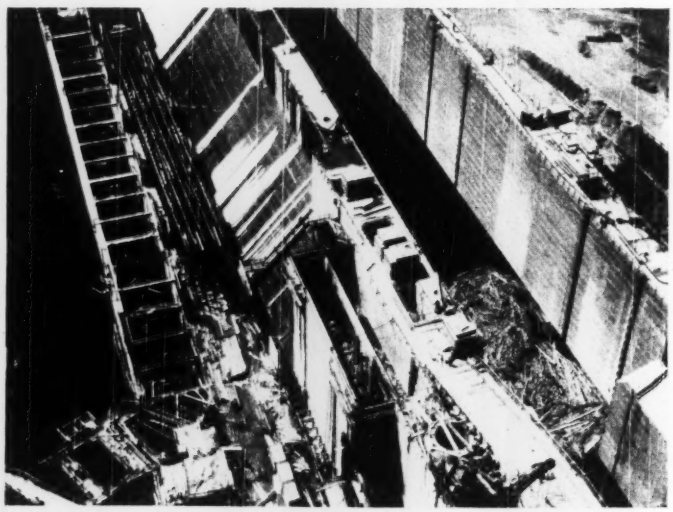
Part of it will arise from the fact that the EJC group includes a few engineers who are employed by organizations that often oppose the federal agencies involved and their projects. This opposition extends from direct competition to appearances before legislative groups in opposition to federal development plans.

But it would be unfair to ascribe the recommendations in the report entirely to those with backgrounds of opposition to federal water practices. Numerous members of the committees have had a considerable experience on the federal side, even in some cases to the point of aiding in the establishment of some of the practices now criticized.

• **Horner heads panel**—W. W. Horner, St. Louis consulting engineer and a past president of the American Society of Civil Engineers, is chairman of EJC's panel. Other members include E. L. Clark, of the American Institute of Mining and Metallurgical Engineers; R. D. Hoak, of the American Institute of Chemical Engineers; C. W. Mayott, of the American Institute of Electrical Engineers; and W. E. Uhl, of the American Society of Mechanical Engineers.

EJC's Coordinating Committee was headed by Abel Wolman, and included as members B. A. Bakhmeteff, L. H. Enslow, Julian Hinds, M. M. Leighton, E. L. Morcland, Thorndike Saville, and, until last April 15, J. A. Short.

For Task Committee findings, see the following page.



POLICY NEEDED—McNary Dam, on the Columbia River between Washington and Oregon, is a good example of the type of federal water development over which a policy dispute is going on. It's built to render navigation service, generate power. Shown here is its fish ladder beside the navigation lock. (Corps of Engineers Photo)

Task Committee reports on water use

Here are summarized the recommendations of five Task Committees which helped prepare EJC's report on national water policy.

WATER SUPPLY

Domestic and industrial water use is the paramount one. This, also, is the only universally distributed use—unlike such more local uses as irrigation and power development. Despite this national character of domestic and industrial use, supplying water for this purpose is essentially a local undertaking.

This being so, urban or private industrial water supply should be built and paid for by those using it. At 2¢ per person per day, it's not an intolerable local cost.

Also, domestic and industrial water being so vital, pollution must be so controlled as to make it practical to provide quality as well as quantity. Pollution should be regulated as nearly locally as possible. Federal jurisdiction of pollution control should be confined to administration of existing law, research and guidance for non-federal regulation.

Communities should pay their fair share of dual- or multi-purpose projects involving public water supply.

FLOOD CONTROL

Flood control, vital to both federal and local interests, should be effected cooperatively, not solely by federal interests. These projects should have capable, independent review. Beneficiaries should make equitable reimbursement to the federal government, and hidden subsidies should not be countenanced. A basin's flood control projects should not be postponed pending completion of upstream flow retardation projects.

Federal leadership in trip-making and data-accumulation is necessary. And federal contributions to project costs should not exceed federal benefits. The United States may properly lend construction funds to local agencies or build a project entirely on a prorated reimbursable basis. And no flood control undertaking should be feasible unless it meets these standards:

1. Average annual tangible benefits must exceed average annual costs.

2. Such benefits, plus whatever the beneficiaries of intangible benefits are willing to pay for those intangibles, must be materially greater than average annual costs.

3. Local interests must contribute an equitable share of intangible benefit costs.

In judging feasibility of components of a multi-purpose project, incremental costs, rather than single-purpose costs of that component, are justified.

A federal revolving fund to assist local financing by loans should be set up. Loans should be preceded by firm repayment schedules which should not exceed 50 years or the maximum estimated project life. Project maintenance responsibility should lie with the most interested party.

NAVIGATION

The federal government had spent, as of a year ago, about $3.7 billion on river and harbor navigation work. Adding related non-federal investment probably would bring the figure to well over 05.2 billion. Maintenance costs have doubled in 11 years to about $83,500,000 yearly and are being augmented all the time by new navigation construction. Some projects are in existence which have no justification.

Annual publication should be made of comparative figures for costs, traffic and benefits—both as estimated on authorization and as actually realized. A method should be set up for terminating uneconomical projects. No new artificial, toll-free canals should be built and study should be made of levying tolls on users of other types of navigation works. And the report adds:

"The use of inland waterways as a regulatory agency to force reductions in rates on land carriers should be abandoned."

BIG LIFT—This 150-ton capacity floating derrick has been purchased by the Johnson Western Co., of Coronado and San Pedro, Cal., from the U. S. Navy. Here it's shown lifting the 140-ton cab of the derrick barge Coronado. Watertight compartments will be flooded as the derrick assumes the full load to maintain trim.

IRRIGATION

Irrigated land now totals about 22,000,000 acres. About 50,000,000 more are susceptible of it—with sufficient water for all of them. About 15,000,000 acres are under development or study for reclamation and 8,000,000 more for supplemental water. Costs of irrigation are increasing and will continue to do so in the future.

There must be developed and followed rational justification standards. They should exclude intangibles. Costs should be borne directly in proportion to benefits received. If this principle be not followed—and increasingly it is not now being followed—water development will "degenerate into the diversion of national income for the benefit of particular regions or classes of people for political expediency."

The report criticizes the fact that as irrigation cost repayments have been extended from 10 to 40 or more, the no-interest policy has been continued. This increases the hidden irrigation subsidy to a point that is "far greater than is commonly realized." It would be better to estimate what water users can pay, credit this amount as amortization and interest and then determine what balance must be repaid from power and other sources within the project's useful life.

HYDRO POWER

Capital costs of federal power should not be subsidized. No power should be sold at less than true cost.

Costs should include all taxes that would be payable on the lands, improvements and business if privately owned. Local enterprise should have priority on hydroelectric power development except where specifically reserved by Congress.

Federally generated power should be sold at the powerplant. Aside from federal energy requirements, there should be federal transmission only to obtain a higher price for the power, and then only after thorough cost allocation on the transmission facilities.

Federal power authorizations should be predicated on the yards they turn in to the Treasury. States and local agencies should be allowed to acquire federal power facilities.

National defense or "strengthening of the national economy" per se should not be adequate justification for federal power development.

And federal power should not be used as a yardstick to determine private power rates and costs.

Revise reinforcing bar specifications, discuss soil properties at ASTM

Testing materials group elects Forest Products Laboratory chief as president—Concentrates on improving existing standards

F. S. Merritt
Associate Editor

Concentrating their efforts in general on improving existing specifications rather than on new standards, members of the American Society for Testing Materials closed a four-day meeting at Atlantic City, N. J., June 30.

The group elected E. J. Markwardt, assistant director of the U. S. Forest Products Laboratory, as president (see cover picture and p. 14) and T. S. Fuller, engineer in charge of works laboratory, General Electric Co., vice-president.

• **Revision**—One exception to the general trend toward improvement of existing specifications was a revision of "Minimum Requirements for the Deformations of Deformed Steel Bars for Concrete Reinforcement" (A305-49).

Adopted last year, this specification led to an increase in allowable bond stresses for bars meeting its requirements. As a consequence, steel companies have been converting from the old type deformed bars to new patterns, including a change from 1, 1¼ and 1¾ in. squares to rounds having equivalent sections.

Because of the odd size diameter of these three bars, Subcommittee V on steel reinforcing bars recommended to Committee A1 on steel that bars be designated by numbers.

Thus, in the revision of A 305, the number given to each bar is the number of eighths of an inch included in its nominal diameter. A bar weighing 0.376 lb. per ft., having a nominal diameter of 1.410 in. (former 1¼ in. square) now becomes a No. 11.

In view of these changes in deformations and bar designations, standard specifications for billet steel bars for concrete reinforcement (A15), rail steel bars (A16) and axle steel bars (A160) are also being revised. The subcommittee recommended that requirements governing properties of new type bars replace those for the old type.

• **Metals and soils**—Ninety papers presented in the technical sessions dealt principally with metals and soils. As to metals, properties studied were corrosion and erosion of gas turbine materials, creep and effect of temperature; symposiums were held on methods of testing, quality control, appearance and chemical analysis.

In the sessions on soils, triaxial load testing and identification and classification were the principal themes. Donald M. Burmister, of Columbia University, cautioned the session that the main purpose of the triaxial compression test is to provide basic information on the stress-strain characteristics of soils. "The actual behavior of soils," he said, "is not only determined by its potential behavior characteristics, but also by the stresses imposed by natural environment and by construction techniques. Testing techniques must take actual conditions into account."

Stanley J. Johnson, of the Corps of Engineers Waterways Experiment Station, told of three types of tests used by his organization for shear testing. Unconsolidated-undrained, consolidated-undrained and consolidated-drained. The first two types are performed, Mr. Johnson said, for practical problems in the triaxial compression apparatus; the third (a slow procedure) is conducted in a shear apparatus.

H. L. Worley, of the Kansas State Highway Commission, reported that triaxial tests have been used in his state to design 1,000 miles of flexible pavement. Moduli of deformation obtained from undisturbed soil samples serve as design criteria—rather than ultimate strengths.

R. K. Bernhard and D. Berdan, of Rutgers University, reported on pilot studies of soil density measurements by X-ray. Both felt that the studies might lead to practical applications of X-rays or radioactive materials, especially where undisturbed samples cannot be obtained otherwise. The two visualized two steel pipes sunk into the ground—one containing a radioactive isotope, the other an electrometer tube and ionization chamber, connected to an indicator on the surface. Such a set-up should make it possible to determine changes in density in the soil between the two pipes.

• **Soil identification needed**—Three speakers urged the necessity of identification and classification of soils. Prof. Burmister and Earl J. Felt, manager of the transport development section of the Portland Cement Association, suggested that soils should be identified in terms of composition and character of the granular components—gravel, sand, silt—and the proportions, plasticity and clay qualities of the clay component. Mr. Felt stressed the point that the soil unit to be considered in the field is the complete soil profile, not individual soil materials or soil layers.

F. A. Abdun Nur, of the U. S. Bureau of Reclamation, outlined the Bureau's system of classification, based on Casagrande's Airfield Classification; and W. F. Abercrombie, of the Georgia State Highway Department, described the system for subgrade materials initiated by the Highway Research Board.

• **Other activity**—Among the steps being taken by ASTM committees to keep specifications up to date is the effort of the Additions Subcommittee of Committee C-1 on Cement to prepare a standard for additions used in making air-entraining portland cements (C226-50T). The object is to eliminate need for the committee to pass on acceptability of individual air-entraining additions.

The Charles B. Dudley Medal for outstanding research papers was presented to Prof. J. Lazan, Syracuse University; Prof. D. S. Clark and Prof. D. S. Wood won the Richard L. Templin Award for a paper on a new testing method; O. B. Ellis, Armco Steel Corp., received the Sam Tour award for research on corrosion testing.

N.Y.C. builders, unions sign 3-year wage pact

Marking another period of labor peace in New York City construction, 24 building trades unions signed a 3-year pact with employers June 30.

Six other unions, including bricklayers, electricians and plumbers, had signed previously with the New York Building Trades Employers Assn.

The 24 unions which signed June 30 agreed that there would be no interruption of work during the next three years, most of them on the basis of wage rates that rose about 25 cents hourly, with no changes in hours. The agreement is based on a combination of the Bureau of Labor Statistics cost-of-living index and a provision that, should the index rise more than 10%, adjustments will be made. The new agreement was signed exactly as the city's first signed Jan. 1, 1948, expired.

Of the 30 agreements of which the compact is composed, only the bricklayers, electricians and plumbers varied from the three-year pattern. The plumbers signed for five years, the bricklayers two years and the electricians one year. The bricklayers, incidentally, obtained the first pension agreement for any construction trade in the country. They accepted their old rate of $3.20 hourly, but with a 3% employer-contributed benefit for pension payments.

CONSTRUCTION BUSINESS

June volume hits an all-time high; record first half is 44% over 1949

Contract awards in June totaling $1,253,720,000 set a new record for any month in history—peace or war. Housing projects, highways and bridges all hit new highs in June.

This highest crest yet in volume closes out the greatest first half in construction history. The January-June total of $5,665,066,000 in engineering construction contracts is 44% over 1949, 70% over 1948 and 15% over 1942, the previous record first half for contract awards.

June was the biggest month ever for private construction at $728,064,000 and the biggest peacetime month for public works contracts, $525,656,000.

Even more private housing projects were contracted in June than in earlier record months of this year. The $464,008,000 worth of June projects is 35% over the April housing record.

Highway contracts also hit a new high at $153,331,000—33% over the record totals of $115 million in July of both 1949 and 1948. And, going along with highways, bridge contracts valued at $51,309,000 set a new record —21% over last September, the previous high month.

• **Record first half**—Here is how the record first half of 1950 compares with last year:

Private contracts totaling $3,234,378,000 are 71% ahead of last year. Public works, $2,430,688,000, are up 19%. Federal contracts totaling $715,813,000 are 29% over last year; state and municipal contracts at $1,714,875,000 are up 15%.

Biggest boon to 1950 construction is housing. Large-scale housing projects contracts are more than double last year (up 114%). This is a main driving force sending waterworks and commercial building also to new highs, and keeping sewerage contracts at last year's record rate.

Other types of construction going higher than ever before are streets and roads, bridges, industrial buildings.

Volume outlook good but competition fierce—AGC

A survey last week of Associated General Contractor chapters shows the national construction situation and outlook to be: (112 chapters representing 5,500 firms)

• **Current volume**—89% reported good to excellent, 7%, mostly highway chapters, reported volume poor, 4% reported fair.

• **Outlook rest of 1950**—85% reported good to excellent, 8%, all highway, reported poor, 7% reported fair.

• **Competition**—97% reported strong, very strong, fierce, worse, etc. 3% reported slightly decreasing or normal.

• **Costs**—58% reported labor and materials prices up somewhat, 30% reported costs stabilized, 12%, all highway, reported costs down. Many reported bids down with prices up.

• **Labor**—59% reported no shortages, 41% reported shortages. Of shortages, 63% reported in trowel trades.

• **Materials**—53% reported shortages in materials, the balance, adequate. Principal shortages reported: steel, 25%; cement, 25%; lumber, 19%; brick, 8%; gypsum, 4%.

• **Building**—Breakdowns of the replies from building contractors or building chapters are:

Current volume—good to excellent, 94%; fair to poor, 6%.

Balance of 1950—good to excellent, 90%; fair to poor, 10%.

Competition—strong, 96%; normal, 4%.

Costs—up, 74%; stabilized, 23%; down, 3%.

Materials—Shortages, 59%.

Labor—shortages, 48%.

• **Highway**—Breakdowns of the replies from highway contractors or highway chapters are:

Current volume—good to excellent, 75%; fair to poor, 25%.

Balance of 1950—good to excellent, 69%; fair to poor, 31%.

Competition—strong, 100%.

Costs—up, 27%; stabilized, 30%; down, 43%.

Materials—shortages, 47%.

Labor—shortages, 16%.

• **Heavy**—Breakdowns of the replies from heavy contractors or heavy chapters are:

Current volume—good to excellent, 90%; fair to poor, 10%.

Balance of 1950—good to excellent, 81%; fair to poor, 19%.

Competition—strong, 96%; normal, 4%.

Costs—up, 64%; stabilized, 32%.

Materials—shortages, 47%.

Labor—shortages, 36%.

ENGINEERING CONSTRUCTION CONTRACTS REPORTED TO ENGINEERING NEWS-RECORD—JUNE, 1950

ENGINEERING NEWS-RECORD *reports residential, U.S. Construction projected at the following minimum costs: Waterworks, excavation, drainage and irrigation, $25,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.*

Five Weeks—Thousands of Dollars (000 omitted)

	June, 1950 — New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U.S.	U.S. Cumulative Six Months 1950	1949	% Change '49-'50	Canada June, 1950
Public Works											
Waterworks	1,376	5,162	4,199	2,108	6,629	3,263	22,737	118,467	87,154	+36	1,410
Sewerage	1,305	6,966	8,546	4,620	5,868	5,585	32,763	128,006	129,676	— 1	1,087
Bridges	3,382	25,229	5,855	6,090	5,295	5,518	51,309	188,201	169,880	+11	4,034
Earthwork and waterways	680	2,846	6,661	5,867	31,760	14,096	60,943	236,282	208,638	+13	7,086
Streets and roads	2,812	47,450	30,506	19,502	43,880	18,741	153,331	612,746	406,961	+51	5,724
Public buildings, residential	5,869	5,098	2,427	809	1,091	3,662	22,422	118,110	291,302	—41	2,763
Other public buildings	12,530	21,067	35,618	21,631	25,200	24,177	141,223	828,334	603,808	+37	8,479
Unclassified	5,156	16,058	5,861	1,630	7,392	8,831	40,928	195,542	141,062	+39	9,465
Total public	35,630	125,829	98,149	62,317	120,055	83,676	525,656	2,430,688	2,047,472	+19	39,609
Federal government included in above classifications	2,196	7,634	14,856	7,883	43,653	29,711	105,933	715,813	555,093	+29	5,469
Private											
Bridges			1,497				1,497	3,980	3,061	+30	
Industrial buildings	1,511	21,054	14,362	27,774	28,752	5,807	99,290	529,187	364,290	+45	11,157
Commercial buildings, residential	15,082	161,331	61,273	60,301	82,214	85,785	464,008	1,906,298	889,283	+114	7,429
Other commercial buildings	4,013	25,063	10,962	23,098	19,887	4,173	88,126	161,560	296,983	—50	6,036
Unclassified		60	2,965	11,050	60,302	896	75,143	282,853	204,843	+38	1,627
Total private	18,606	208,448	91,061	122,223	191,155	96,571	728,064	3,234,378	1,892,496	+71	26,193
Total Engineering Construction:											
June, 1950 — 5 weeks	54,236	334,277	189,210	184,540	311,210	180,247	1,253,720				65,802
May, 1950 — 4 weeks	55,176	277,444	150,557	140,115	186,067	140,865	931,153				48,514
June, 1949 — 5 weeks	51,461	182,323	127,829	143,949	236,766	153,809	896,128				47,863
Six Months — 1950	285,421	1,460,208	825,222	776,106	1,304,314	1,013,795		5,665,066			299,295
Six Months — 1949	175,387	986,448	588,586	518,819	1,035,747	637,011			3,939,960		209,042
% Change '49 to '50	+63	+48	+40	+50	+26	+59				+44	+ 08

BIDS AND BIDDERS

Major project news received after Construction Reports, page 74, went to press.

Apartments—John W. Harris Associates, Chicago, Ill., are owners and contractors for eight 14-story apartments, known as Irwin Gardens, in Chicago, to cost about $10,000,000. Shaw, Metz & Dolio, Chicago, are architects.

Bolivian Road—Morrison-Pan Pacific Co., Paramount, Calif., will complete Cochabamba-Santa Cruz Highway in Bolivia for the Bolivian Government, La Paz. Estimated cost is about $16,000,000. Knappen-Tippetts-Abbett Engineering Co., New York, N. Y., is engineer.

Office—Charles T. Fisher, Detroit, Mich., plans 11-story office in Detroit at about $10,000,000. Albert Kahn Associated Architects & Engineers, Inc., Detroit, is architect.

Gas Pipe Line—Ballco Gas Pipe Line Comm., Inc., Houston, Tex., plans constructing 1,278 miles gas line from Texas, running through Louisiana, Arkansas, Missouri, Illinois, Indiana into southern Michigan. Including booster stations, cost will be about $132,850,000. An additional 162-mile line will extend from Texas to Louisiana and will cost $9,820,000. Plans for additional compressor stations and feeder lines, when above projects are completed, are estimated at $33,500,000. R. G. Schneider is company engineer. Applications for hearing on project has been made to Federal Power Commission.

Trenton Dam—Vinnell Corp., Inc., Ralph A. Bell and United Concrete Pipe Corp., Alhambra, Calif., were low bidders for constructing Trenton Dam, Frenchman-Cambridge Division, Missouri Basin Project, in Nebraska at $4,726,377. Department of Reclamation, Denver, Colo., opened bids June 23; the estimated cost is $5,594,328.

Laboratories—International Harvester Co., Fort Wayne, Ind., awarded contract for the construction of motor truck engineering and testing laboratories at Fort Wayne, to Ragnar Benson, Inc., Chicago, Ill. Fabrication and erection of structural steel was let to Gage Structural Steel Co., Chicago, Ill. Total cost will be $6,500,000. Albert Kahn Associated Architects & Engineers, Inc., Detroit, is engineer.

Fairgrounds—Ukiah Second Agricultural District, Santa Ana, Calif., plans improving Orange County Fairgrounds at Santa Ana, to cost about $6,000,000. Bennett & Bennett, Pasadena, are architects for the fairgrounds project.

Houses—Modern Home Builders, Inc., Bellevue, Wash., plans to erect 5,500 houses near Bellevue during a twelve year period. Entire cost will be $50,000,000.

Classroom—University of Michigan, Ann Arbor, Mich., plans rebuilding Hoyn Hall to cost about $4,000,000. Legislature has voted $1,500,000 to begin work.

Hospital—St. Joseph Hospital, Burbank, Calif., plans hospital addition at Burbank. Estimated cost is $8,000,000. John W. Maloney, Seattle, Wash., is architect.

Dam—U. S. Engineers, Tullahoma, Tenn., awarded contract for dam in Elk River, near Tullahoma, for use in cooling testing equipment at Arnold Engineering Development to Arundel Corp., Baltimore, Md., and E. E. Dyon, Construction Co., San Gabriel, Calif., at $2,868,100.

Water Plant—City of Dallas, Tex., will open bids July 25 for chemical mixing plants, clear water storage wells at Carrollton Water Plant. Cost will be about $2,000,000. Myers & Noyes, Dallas, are engineers.

Apartments—Jackson-Harmon Gardens Homes, Chicago, Ill., plan sixteen apartments in Chicago at $4,000,000. Heisman, Halsman, Klekamp & Taylor, Chicago, are architects.

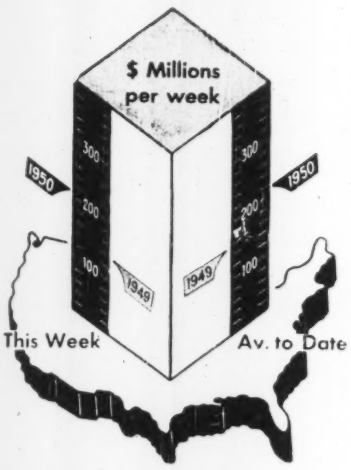
Chief Joseph Dam—U. S. Engineers, Seattle, Wash., awarded contract for constructing first stage of Chief Joseph Dam, near Bridgeport, Wash., to Peter Kiewit Sons Co., Longview, $2,572,544. Estimated cost is $2,560,408. Kiewitt was also low on May 12 opening at $2,715,868, but bids were rejected because of error.

Bridges—New Jersey Turnpike Commission, Trenton, N. J., received low bids June 29, for bridges in Burlington & Mercer Counties from Conduit Foundation Corp., Philadelphia, Pa., at $2,129,448, and for bridges in Union County from Gow Construction Co., New York, N. Y., at $2,875,751. Parsons, Brinckerhoff, Hall & MacDonald, New York, N. Y., are consulting engineers on first project and Edwards & Kelcey, Frederick R. Harris, Inc., O. J. Porter and Ammann & Whitney, Newark, are consulting engineers on second project.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	July '50	511.91	246.07
Building Cost	July '50	376.96	203.74
Volume	June '50	427	187



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

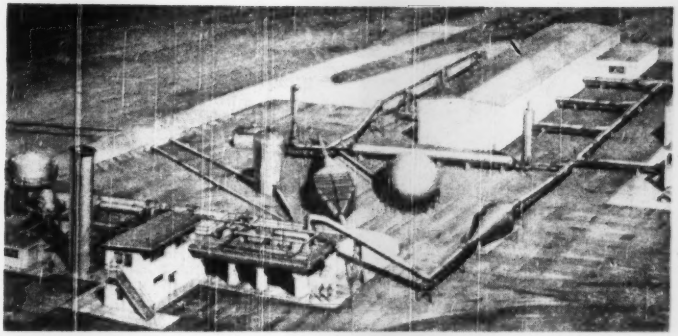
Week of July 6 1950	1950 wks.	Cumulative 1949 wks.	% chge
Federal $29.8	$324.1	$258.9	+ 25.2
State & Mun. 77.9	1,792.5	1,565.2	+ 14
Total Public $107.7	$2,502.8	$2,134.1	+ 17
Total Private 103.6	3,344.6	1,903.4	+ 76
U. S. Total $211.3	$5,829.1	$4,028.5	+ 44

Contracts by type of work

This Week	1950 wks.	Cumulative 1949 wks.	% chge
Waterworks $22.6	$121.1	$88.7	+ 36
Sewerage 2.2	66.6	126.6	Negl.
Bridges 4.4	195.1	129.0	+ 51
Highways 34.1	642.1	436.5	+ 47
Earthworks			
Waterways 18.4	249.7	315.6	- 21
Buildings			
Public 36.5	861.8	628.7	+ 37
Housing, pub. 2.6	120.2	205.7	- 42
Housing, priv. 64.2	1,366.1	966.1	+ 41
Industrial 20.1	504.2	342.5	+ 47
Commercial 12.7	423.5	299.4	+ 41
Unclassified 21.8	500.2	572.4	- 13

NOTE: Minimum size projects included are: Waterworks and waterway projects, $25,000; other public works, $50,000; industrial buildings, $50,000; other buildings, $250,000.

Bond Election—City of Charlotte, N. C., will vote July 29, on $1,750,000 bonds to enlarge water supply; $2,000,000 for improving sewerage system and constructing new sewage plants; $1,500,000 for grade crossings and $500,000 for street improvements.



PUSH-BUTTON PLACE—The Navy is spending $30,000,000 to develop its Air Missile Test Center at Point Mugu, Calif. First phase is about complete. At top above is an artist's sketch of the air blast facility, contract for which has just been let. It's a form of wind tunnel, powered by a 25,000-hp plant. Its three nozzles will feed two super-sonic and one trans-sonic test chambers. Below is shown the latest type of enlisted men's barracks, to accommodate 500 men. (Official U. S. Navy Photos)

Navy readies missile test center

With the award of an $821,225 contract to the Ofeco Construction Co., Long Beach, Calif., for construction of an air blast facility, the first installment of a $30,000,000 permanent building program at the Naval Air Missile Test Center, Point Mugu, Calif., neared completion.

Started in 1948 following Congressional appropriation of $14,000,000, more than $9,500,000 worth of building and engineering projects have been completed or are under way. Only about $500,000 remains for over projects from the original appropriation. About $2,400,000 for land acquisition and $1,500,000 for collateral equipment, administration and soil conservation made up the balance.

Plans and specifications are now nearing completion for a new fuel tank farm, a sewage treatment plant and a boundary fence and perimeter road, to exhaust remaining funds.

• **More to come**—The second installment of construction, planned contingent upon the appropriation of another $16,000,000, will consist of 34 separate projects devoted mainly to missile launching and other technical facilities. Upon its completion, the center will be the most modern and complete missile testing station in the world, the Navy says.

The air blast facility, with 25,000-hp power plant, is a variation of wind tunnel that permits testing of engines under the super-sonic conditions encountered by rockets and guided missiles. The Bureau of Aeronautics has allocated $1,332,000 for its erection. Air from the blower feeds a wind tunnel building containing three nozzle sections, of which two nozzles will be for super sonic tests and one for trans-sonic tests.

The first contract to be awarded under the project was for pre-construction surveys, engineering investigation and preparation of construction drawings and specifications. It was completed last April by the Parsons-Jurgensen Co. at a cost of $1,215,00

• **Dredging raised sites**—Before contracts could be advertised for new roads, utilities and buildings it was considered advisable to raise the existing ground level of various building sites. Some 3,000,000 cu yd of material were moved by hydraulic dredging. The $1,132,600 project was completed in May, 1949, by the Standard Dredging Corp. and the San Francisco Bridge Co.

Other construction contracts concluded or under way include: $2,158,000 worth for buildings for administration, instrumentation, test and evaluation, small missiles, transmitters and receiver, by the Alliance Construction Co.; about $1,500,000 for a telephone building, hangar, security building, housing and a sewer system, Robert E. McKee Co.; $1,040,000 for runway construction, Griffith Co.; $666,000 for a water and gas system, Ventura Pipe Line Construction Co.; $530,000 for the main base road, a drainage ditch and a recreational facility, Gridley Construction Co., and $442,000 for installations on Santa Cruz Island, E. R. Siple Co.

Concrete lining pushed on Grand Coulee canal

Large-scale concrete placing has been resumed in eastern Washington on the lining of the feeder canal linking the Upper Grand Coulee with the reservoir behind Grand Coulee Dam on the Bureau of Reclamation's Columbia Basin project. Completion is scheduled for Oct. 1.

The canal has a greater capacity than the All American Canal (16,000 second-ft as compared to 15,155 second-ft) but is considerably shorter (2 mi as compared to 80). All the Columbia River water which will feed the vast Columbia Basin project south of Coulee Dam will be pumped 280 ft up through a dozen 12-ft dia discharge pipes into the canal.

Although the canal is scheduled for completion this fall, water will not start flowing through it until next May.

J. A. Terteling & Sons, Inc., has the contract both for the canal and the North Dam, which blocks off the coulee. It lined some 600 ft of canal last year, has another 5,900 ft to line this year. The canal is about 50 ft wide at the bottom, will take water to a depth of 27 ft.

Two 23-Story Buildings Tied Together

FOLLOWING CLOSELY on the heels of workmen, the Standard Oil Company of California is progressively occupying a 23-story addition to its San Francisco home office—and expects to be in full possession by the end of August.

The addition is joined to the existing structure, to reduce earthquake hazard and prevent differential settlement. The two steel-frame buildings are tied together by (1) Shear keys made by omitting window openings in the old structure, (2) a common wall for the top six floors and (3) miscellaneous minor ties.

Because the structures have different vibration periods, the joining was necessary to prevent damage during an earthquake the two buildings might bang together. The shear keys are essential to prevent differential settlement, because the structure is located in an area of general subsidence resulting from the consolidation of deep underlying sedimentary soils.

The original unit, completed in 1922, was L-shaped with legs of 137 and 205 ft. The new structure will make the building U-shaped with the legs of equal depth (but of different width).

Connecting halls between the two structures and identical external architectural treatment will make the building one unit. To handle the new traffic load, six elevators are provided in the new structure to supplement nine in the old.

• **Lateral force design**—The old structure was designed before the San Francisco building code included provision for earthquake forces. Thus, it was required to sustain a 20-lb per sq ft wind load. This entire horizontal force is resisted by the steel frame.

The code under which the new building was designed required an earthquake factor of 2% gravity. But only 1% of this is resisted by the steel frame, the other 1% being taken by the reinforced concrete walls and floors (except in the first three floors where extremely high windows reduce the concrete and require that the entire 2% gravity earthquake factor be resisted by the steel frame).

Because the new unit is relatively narrow as compared with the depth, wind load (20 lb per sq ft) governs in the end frames. Due to the shape of the structure, this force is equivalent to 1.48% gravity and is entirely resisted by the steel frame.

The spandrel walls of the two structures are different, the original unit

HOW OTHER BUILDING ADDITIONS IN SAN FRANCISCO HAVE BEEN HANDLED

Not only the Standard Oil Building but four other San Francisco structures have been enlarged by additions in recent times. Two of the new additions were constructed as separate and distinct structures with no physical ties to the old unit. The other two were made integral parts of the original unit in this—as the Standard Oil building.

Because so little is actually known about behavior of structures under earthquake conditions, these five structures will provide interesting full scale data in case of another major San Francisco temblor. For example, some light may be shed on space that should be left between structures—either separate units built up to the property line or two parts of the same unit structurally separated. Complicating all of this is the possibility that even the slightest differential settlement of foundations will throw a high building inches out of plumb.

The Pacific Gas & Electric Co. building addition illustrates the separation of structural units. The twelve-story addition is around the corner from an existing fifteen-story structure. Hall & Pregnoff, structural engineers on the job, specified a 6-in. separation between the two structures because the new unit differs not only in structural frame but in type of foundation. The old P.G. and E. building is on separate footings, the new on a solid concrete mat. The old building was designed for wind load only, whereas the new wing is designed for an earthquake loading of 5% of gravity with concrete walls for stiffening. The only access between the two buildings is at corridors where sliding plates permit relative movement.

A similar situation is involved in the new wing for the Matson Navigation Co. building located on the other side of the same block as the P.G. and E. addition. This job, designed by Leland S. Risdon, consulting engineer, involves a new wing designed with the use of earthquake factors, added to an old structure designed only for wind load. Both units are pile supported, both are designed for a full fifteen stories plus penthouse. The new addition, however, was only built seven stories high—it will be extended the full 15 floors when needed. Here again due to the difference in the structural frame, the buildings were completely separated, with a 4-in. space allowed between.

Selection of 4 in. in the Matson case as compared with 6 in. in the P.G. and E. case is a matter of engineering judgment. That's because exact computation of vibration amplitude under earthquake action of a building frame is difficult if not impossible. Other engineers might sponsor valid reasoning that leads to no separation of the structures or to a separation significantly greater than 6 in.

In the Matson case, deep steel beams with moment connections provide lateral force resistance. The buildings are interconnected with sliding plates at the corridors and copper expansion joints, making a dead air space for the 4 in. between buildings.

In the Matson structure also, lightweight aggregate (Haydite concrete) was used from the first floor level up, to reduce load on the pile footings.

Contrasting with these structures are two jobs designed by J. H. Nishkian and B. L. Nishkian, San Francisco consulting engineers. In one case, an eleven-story steel frame structure was added in 1940 to an existing eleven-story building constructed in 1917. This combined structure houses the home office of the Bank of America. Here the wall of the old building was cut completely away, and the steel frame of the new structure physically joined with the steel frame of the old. This made a much larger building with a single structural frame. Since this building is only eleven stories high and since the length to width ratio is not very great, this could be done without danger of damage from earthquake.

A similar instance was handled by the same engineers in expanding the nine-story Western Merchandise Mart in 1946. Because of the relatively low height it was possible to make the two reinforced concrete buildings one structure. In this case, the existing wall built in 1938 was cut away and double columns built at the junction plane. The fact that both portions were designed under the same code using the same earthquake factors added to the feasibility of a unified structural frame.

using brick and the new lightweight concrete. This means that there is more weight in the walls of the old unit.

• **Six-story common wall**—The major physical tie that will prevent separation in the event of an earthquake is a common wall for the top six stories.

Four stories of this common wall were made feasible by a set-back on the old unit from the nineteenth floor up (this is actually the twentieth floor because there is an unnumbered storeroom floor just below it). Under the new construction program, this set-back is being eliminated at the junction of the two buildings.

New columns required for the outside wall section of the old building are tied into the common wall, as are columns for the new extension. This wall is heavily reinforced concrete 10 in. thick, and columns of both old and new structures are tied into it.

The other two floors of common wall are just under this old set-back. Brickwork on the eighteenth and nineteenth floors of the old building was removed to permit the wall construction. Here the existing columns of the old unit and the columns of the new unit are tied into the wall by wrapping 2-in. round bars at 4-in. centers around the adjacent columns.

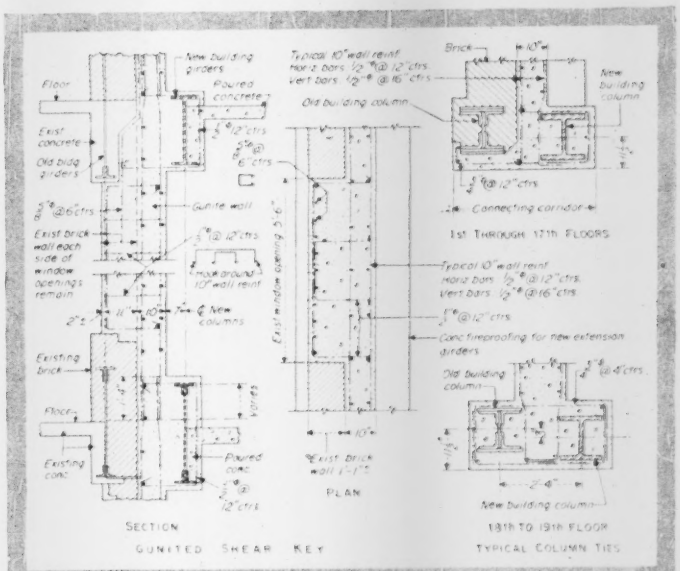
Other minor ties are provided in each of the lower floors where corridors are cut through between the buildings. Here concrete walls with substantial reinforcing are installed partly around the existing columns adjacent to the corridor. These walls thus form structural parts of the new building.

• **Shear keys**—Original plans called for completely tearing out the wall of the existing building that is adjacent to the new addition. Then one new wall common to both buildings and tied into both frames would have been built for the entire height. Other early discussions included consideration of welding plates between columns of the two units at various building levels.

However, further analysis indicated such a tie was unnecessary. Further, when the contractor dug into the existing wall, he found that the brick construction was extremely good. It was a solid, 1-ft thick brick wall that extended up to the nineteenth floor—supported, of course, by the steel frame. At each floor level, from the fifth up, the brick wall had five window openings, 5 ft 6 in. wide by 7 ft 8½ in. high.

To assure uniform vertical movement of the two structures, these window openings were plugged with

TO REDUCE EARTHQUAKE HAZARD and prevent differential settlement, this 23-story addition was tied to the existing building.



DETAILS SHOW HOW ADJACENT COLUMNS of the two buildings were tied together with reinforced concrete; shear keys were gunited in existing window openings.

gunite—the plugs acting as shear keys. The brickwork is considered well able to resist compressive forces.

In effect this means that the 10-in. reinforced concrete wall of the new buildings has four 1-ft extensions into the old building at each floor from the fifth through the eighteenth. (The fifth window opening at each floor was cut out for a connecting corridor.) These shear keys were heavily reinforced to make them a definite part of the wall system of the new building.

Construction of the shear keys was delayed until late in the construction program so that almost all the dead load would be on the new frame and initial consolidation of the underlying soil would be relatively complete.

Lightweight concrete (Haydite aggregate) was used in the new structure to equalize the unit pressure exerted by the concrete mat footings of the two structures. The lot limits restricted the area of mat footing for the new structure. Thus, plus a heavier concentration of walls for elevator shafts, etc., made use of lightweight concrete necessary.

Because heavy rolled sections were not available when the original building was constructed, the wind girders were made of relatively complicated built-up sections involving deep gusset plates. These extended about 3 ft above floor level. These wind girders in the middle bay of the old structure at the junction section were cut to provide corridors between the buildings.

In general the procedure involved cutting out the top gussets and the top part of the built-up girder. Then a new upper flange for the girder was provided by welding heavy angles on each side of the existing web. The depth of the new building provided ample resistance to forces in the direction of these girders. Thus some of the material could be omitted.

Of interest in this job is the fact that the same architectural, structural engineering, mechanical engineering and construction firms were involved on the two jobs, almost 30 years apart. Architects on the new addition are Harry A. Thomsen and Aleck L. Wilson; they are successors to the old firm of George W. Kelham which designed the original structure. H. J. Brunner was structural engineer on both jobs.

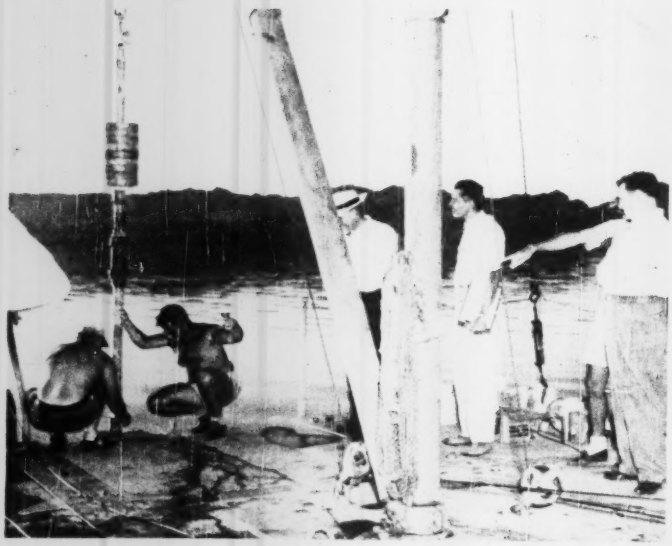
F. B. Hunter did the mechanical and electrical design on the new unit; on the original unit it was done by Hunter & Hudson (same Hunter both times).

The original building was constructed by the firm of Lindgren and Swinerton; the new structure is being built by that firm's successor—Swinerton and Walberg Construction Co., San Francisco. The American Bridge Co. did the steel fabrication and erection on both units.

Supervising the job for the Standard Oil Company of California is the building design and construction department headed by E. P. Wright and assisted by J. E. Rinne.

Filling of Lake Mead with Silt Estimated to take 445 Years

A study of the rate at which Lake Mead is being filled with silt, just completed by scientists of the U. S. Geological Survey, concludes that the reservoir behind Hoover Dam will be filled with silt and sand by the year 2380 A.D., 445 years after the completion of the dam. However, as the construction of other dams farther upstream is planned, the useful life of the reservoir should extend over many centuries.



WEIGHT ASSEMBLY being attached to a free-fall sampler on one of the Navy barges used in measuring the silt deposits for calculations of the amount of silt in Lake Mead and its rate of consolidation.

The study, which was made at the request of the Bureau of Reclamation, has been under way for two years. It involved the taking of 1,600 cores, some as long as 90 ft., through the silt deposits using techniques developed by oceanographers. The U. S. Navy Electronics Laboratory and the Navy Hydrographic Office assisted in this work and in determining the amount of silt now in the lake and the manner in which it is consolidating.

The present amount of silt is placed at 1,423,000 acre-ft. The total capacity of the reservoir, at spillway level with the gates raised, is now 29,827,000 acre-ft, as compared to the original capacity of 31,250,000 acre-ft.

Included was a study of the amount of dissolved salts in the waters of the lake and a determination of whether the presence of large beds of soluble salts in the submerged areas would seriously affect the quality of the water drawn from the reservoir. The latter fears were found to be groundless.

The dissolved mineral solids are principally silica and salts of calcium, magnesium, sodium and potassium. Apparently calcium carbonate is being deposited from the water during storage.

LAYER OF LIMESTONE below cofferdam shows up here as excavation proceeds. It's porous, but not leaking seriously. A curtain of sanded intrusion grout seals its pores. An enlargement of the encircled area appears below.

Cofferdam Grouting At Jim Woodruff Dam

Fred A. Robeson
Chief, Soils and Geology Section
Corps of Engineers, Mobile, Ala.

William E. Webb
Project Geologist, Jim Woodruff Dam
Chattahoochee, Fla.

CLOSE-UP of the rockface shows how grout (colored with lampblack) tightly fills voids in rock.

SANDED INTRUSION GROUT solved the difficult unwatering problem in recent excavation for the navigation lock at Jim Woodruff Dam, Chattahoochee, Fla. Subsurface exploration showed that the usual cofferdam and wellpoint control of water would not do. A grout curtain was needed in the porous Tampa limestone under the cofferdam.

Grouting was used not to stop leakage completely, just to reduce it to an amount easily pumped away without impeding construction activity. Results have been highly satisfactory.

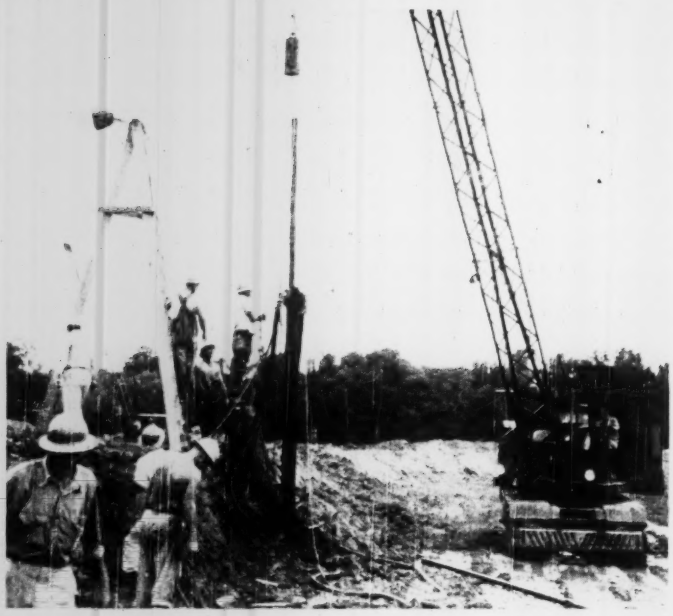
This pre-excavation grouting operation is believed to be the first such application of the type of grout used. In addition to water, portland cement and sand, ingredients included two patented admixtures used to prevent segregation, early stiffening and shrinkage.

• Investigations proved need—Jim Woodruff Dam is being built across the Apalachicola River where it is formed by the confluence of the Flint and Chattahoochee. The navigation lock is within 300 ft of the stream's west bank. Excavation has been carried to 30 ft below normal river level.

Experience on an earlier contract—an earthfill dike east of the river—indicated dangers of the water-bearing rock. Excavation on this earlier job was a full 1,000 ft from the river and went down only 20 ft below normal river level, yet wellpoints and sump pumps were needed, and a neat cement grout curtain had to be placed below the cut-off trench.

Grout consumption was high and frequently did not materially reduce inflow of water into the excavation. This pointed to the need of a sanded grout for the lock excavation—for economic reasons.

Subsurface exploration further de-



SETTING GROUT RISER through hole puncher. Hole already has neat cement grout in it. Driving riser into this resulted in effective seal.

timed the necessity of placing a grout curtain. Core drilling, water pressure tests and a study of two 36-in. dia calyx drill holes all helped to guide the choice.

Lampa limestone that underlies the site varies from soft, granular and earthy to dense and crystalline, and contains many weakened zones. Weathering, leaching, oxidation and solution channels are prevalent. Below the Lampa limestone is a relatively unweathered and impervious layer of sandy limestone, below that is Superior limestone, another highly water-bearing rock. The grout curtain was carried only to the middle, impermeable, layer of solid, unweathered limestone.

• **Grout ingredients**—Admixtures in the grout are two patented products of the Prepakt Concrete Co., of Cleveland, Ohio. The first, Alfesil, is a pozzolanic flyash high in silica that acts as a filler. It separates the cement particles, preventing their flocculation, and combines with lime released by the cement to form a stable compound. The second, Intrusion Aid, creates a film of cement particles that gives the mix the properties of a colloidal suspension, keeping its constituents from separating—a frequent trouble with standard grout. It eliminates setting shrinkage, producing instead an expansion of the grout just prior to initial set. It also helps prevent early stiffening of the mortar, easing pumping through supply lines and rock voids. By slowing initial set to 20 hours, this admixture also permits washing the grout riser, making redrilling for the next stage of grouting unnecessary.

• **Grout mixes**—Suitable grouting mixes and procedures were developed by trial and error, since little information on this use of intrusion grout could be found.

At first, a local, unprocessed floodplain sand deposit adjacent to the job was used. But this did not meet the recommended grading specifications. Its fineness modulus was 0.83, and it required hand screening at the mixer to remove roots and other foreign matter.

Trial mixes using this sand were set up in the laboratory to range from zero to 12 parts of sand to one part of neat grout. Neat grout consisted of one sack (94 lb.) of cement, one sack (75 lb.) of Alfesil, and 2.5 pounds of Intrusion Aid as constant proportions. Varying amounts of sand and water were used in the trial mixes. The optimum water content of the trial mixes was that amount which produced a viscosity described as "thick cream consistency." This water content is important because mixes with more than the optimum water tend to shrink instead of expand upon setting.

A wide range of sanded and unsanded grout mixes was used in the early experimental stage of field grouting. Unsanded mixes containing 11, 15, 30 and 60 gal of water respectively were the most common. Most generally used of the sanded mixes were those containing 4 parts of sand and 24 gal of water; 6 parts of sand and 30 gal of water, and 8 parts of sand and 40 gal of water. Cavernous areas required use of a mix containing 10 parts of sand. However, to prevent plugging at the start, grouting in each hole was started with an unsanded mix.

The experiments dictated a better graded sand—a 50:50 combination of the local sand used in the first trials, mixed with a river sand that was being produced commercially nearby.

The resultant grading was very near that recommended by the Prepakt Concrete Company and had a fineness modulus of 1.29. The apparent advantages in the field for this improved sand blend are: (1) decreased water content, (2) less mixing time to produce homogeneous grout, and (3)

INSTRUCTIONS TO INSPECTORS

"Grouting of each hole should begin with an injection of intrusion grout without sand to lubricate passageways and prevent the fouling of holes with small void space through errors in judgment in choosing the initial sanded mix. The particular intrusion mix without sand will be chosen in the field but should conform to those shown on the laboratory volume tables. Inject the unsanded mix in sufficient quantity to fill approximately 10% of the estimated void space. If the hole shows any indication of building up pressure, inject an additional 10% of unsanded mix to determine the possibility of grouting the hole to refusal with this type mix. If the pressure does not increase, change to intrusion grout with sand. The sand in this mix should be progressively stepped up until the heaviest desired mix is reached. Continue pumping until the computed quantity of grout is injected or until the hole refuses at maximum pressure; however, the total quantity needed is subject to the inspector's decision based on hole conditions."

higher proportion of mortar for a given quantity of sand.

• **Grouting procedures**—After some experimentation, engineers obtained a satisfactory seat for the grout riser in the rock by jetting a 6-in. ID heavy gage casing (or hole puncher) to the top of rock, and churn drilling a 5-in hole 2 ft into rock with a guide-equipped cable tool.

Several methods of sealing the grout riser, after inserting it into the hole, were only partially successful; these were discarded in favor of pouring a neat cement mix into the hole, then driving the grout riser to the bottom. This resulted in an effective seal in most cases. The casing was pulled, following this operation.

Cofferdam grouting was done in stages, each stage being about 15 ft in depth, unless circulation was lost at a lesser depth, which then became the bottom of that stage. Total depth of hole was governed by the elevation of the relatively unweathered layer of sandy limestone referred to on the preceding page.

Pressures used in the first stage followed the general rule of thumb—1 psi per ft of depth including the overburden. Pressures for second stage varied according to the rock conditions encountered, using as a basis curves presented by Creager, Justin and Hinds in "Engineering for Dams," Volume I.

Grout holes were drilled 2½ in. in dia with primary spacing of 20 ft between holes. Intermediate holes were drilled halfway between primary holes. With few exceptions, results in the secondary holes indicated that grout had traveled about 10 ft, from the primary holes.

On this basis, a tentative grouting goal was to fill the estimated voids in a 10-ft radius around each grout hole.

Void space was computed on the basis of leakage tests, experience from grouting other holes in the area, exploratory core borings and estimated size of voids.

• **Grout plant**—Intrusion grout was mixed in a movable plant with two skid-mounted, tandem drum mixers, each 6 ft long by 3 ft in diameter. The grout pump was able to pump from either drum. This pump, also skid mounted, is double-acting, 6-in. duplex, having large valve openings, removable valve seats, and removable liquid-end liners of hardened alloy steel. Pistons are molded rubber with forged steel hubs. Rubber valves are provided with special steel insert seats. The grout plant and mixer are driven by compressed air at 100 psi, supplied from a central compressor plant of 1,200-cu ft capacity.

EXCAVATION to a depth of 30 ft below normal river level was possible with little pumping—thanks to curtain of sanded intrusion grout.

Ingredients were placed in the mixer through an 18-in. slot by dumping from wheelbarrows (except water and Intrusion Aid). To insure complete and equal mixing the following sequence of materials was used: (1) water, (2) Intrusion Aid, (3) Alfesil, (4) cement, and (5) sand. A small amount of lamp-black coloring was added to provide easy identification of the grout. The mixing time varied from 2 to 4 minutes, depending on the sand and water content.

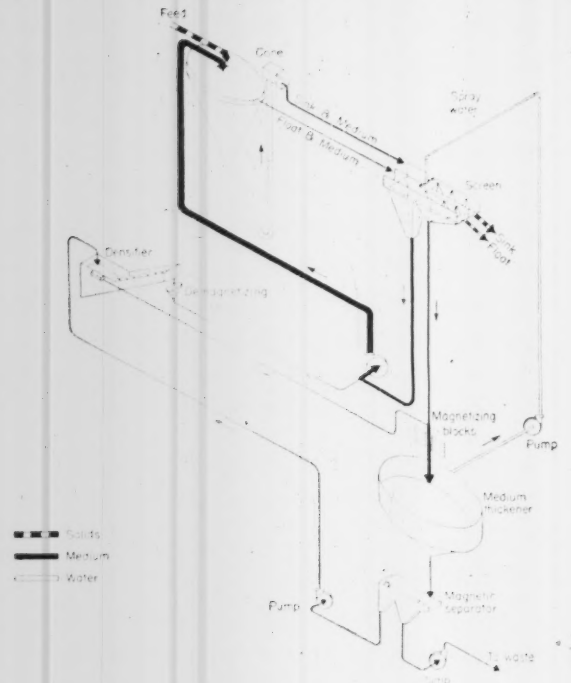
Grout was pumped from the mixing plant to the grout holes through 2-in ID high pressure hose connected to the grout hole by a header arrangement equipped with pressure gage, by-pass valves and a return hose line. Sanded intrusion grout has been pumped as much as 300 ft from mixer to grout hole.

• **Results**—Cofferdam grouting for the entire lock, excluding the upper guide and guard wall section, has required the following quantities: 5,451 ft of drilling, 2,824 ft perimeter of grout curtain, 152,020 cu ft of grout (an average of 28 cu ft per ft of drill hole), 22,938 bags of portland cement, 94,270 cu ft of sand, 22,858 cu ft of Alfesil and 62,660 lb of Intrusion Aid.

Several minor water flows are present in the excavated area, but numerous grout plugs are observable in the walls of the cut, especially in the zone of intensive weathering about 3 ft below the top of the rock—and these have apparently effectively sealed off extensive water inflows. During last March, the river rose approximately 10 ft, and only a slight increase in water inflow into the excavation was recorded as a result of the rise.

Specifications were set up to minimize greatly the contractor's risk in unwatering the excavation. This was accomplished by establishing fixed unit prices for such items as pumping from protected areas, drilling grout holes, portland cement, sand, and admixtures in intrusion grout. The fixed unit prices were set below the actual cost of such operations to prevent exploitation of any item.

Work on this second major construction contract at Jim Woodruff Dam was started early in June, 1949, by Perini, Walsh, Mills, and Blythe Brothers Construction Companies, contractors for the lock and fixed crest spillway construction. Work was performed under Thomas L. High Tower, resident engineer for the Corps of Engineers. Col. W. K. Wilson, Jr. is district engineer of the Mobile District. William E. Webb is project geologist.



STEPS IN HEAVY-MEDIA SEPARATION by which poor quality stone can be removed from gravel. Gravel and heavy medium are fed into cone separator where material heavier than the medium sinks, lighter material floats. Both move to screens where the medium is washed off to be reclaimed. Light material is wasted and acceptable material goes to stock piles.

See Construction Use For Fast-Growing Mining Process In Improving Gravel

A PROCESS known as heavy media separation—by which valuable ore can be separated quickly and cheaply from waste material—is quite common in metal mining, and is catching on fast in coal mining.

Present indications are that the process will prove equally useful in construction, as a means of improving coarse aggregates for concrete.

Proponents claim that two materials, if there's a difference of specific gravity, can be separated by HMS, the float sink method.

No matter what kind of separatory vessel you use—a cone, revolving drum, or screw separator—the principle is the same. By close, and easy, regulation of specific gravity of a fluid heavy medium, it is possible to float one material while others sink.

In iron ore beneficiation, the good ore-bearing rock sinks while worthless gangue floats on the surface. Used to clean coal, heavy-media separation not only removes refuse (ash and sulphur) but also separates steam coal from higher grade coking or metallurgical coal.

• **How about gravel?**—Specification writers are becoming increasingly aware of quality control on concrete ingredients. There is growing concern about compatibility of materials. Aggregate must not only be strong; it must have given qualities regarding expansion and contraction under temperature change, reaction with cement, water or admixtures, and color or discoloration.

Heavy construction has moved to remote places; the specified aggregate is not always readily available. Washing and screening sometimes will not separate harmful components from good sound gravel of the available source. But heavy-media separation will do the job, if there's a difference in specific gravity—in a size range 6in. to ¾in.

So far, it has been given the chance but once.

At Rivers, Manitoba, the Royal Canadian Air Force has put an HMS mill to work on local gravel containing much harmful shale. In so doing it has saved an estimated $2.20 on each cubic yard of aggregate used in the 120,000 cu yd of concrete pavement on new runways.

The nearest commercial source of good gravel was 165 miles from the job; the freight rate was $2.51 per cu yd. Total cost of imported material, including its purchase price, freight and unloading charges, was estimated at $3.90 per cu yd. Total cost of the local material was about $1.70 per cu yd, of which only 7 cents went toward HMS plant operating costs.

Western Knapp Engineering Company of San Francisco built the mill for the RCAF. American Cyanamid Co. tested samples from the job at its Stamford, Conn., pilot plant and gave technical advice on specific gravities and mill design. Representing American Zinc, Lead & Smelting Co. (controller of patents on the process) American Cyanamid runs tests, recommends equipment, assists in start-up of plants and trains operating personnel.

Shale in the Canadian gravel bank had a 2.0 specific gravity; usable gravel averaged 2.6. Shale was effectively eliminated in a mixture of water and magnetite (commercially available in proper grades) having a specific gravity of 2.45. Rate of feed reached 80 to 100 tons per hour with a separation from which 75% was reclaimed, 25% wasted.

• **Operation details**—HMS plants clas-

handle materials with specific gravities between 1.25 and 5.75, and the process can separate those with specific gravities varying as little as 0.01—within the proper size range. Magnetite in water is used with lighter materials like coal; ferrosilicon in water handles heavier jobs such as iron ore or diamonds. The two can be mixed (with water) to obtain any desirable intermediate specific gravity. With either or both of these magnetic compounds, close control (even automatic control) of specific gravity is possible; both stay in suspension without much agitation; each is easily recoverable by magnetic action.

In actual operation HMS mills pass treated material while the heavy medium circulates in a close system. Loss of medium is nearly negligible—about ½ lb. for each ton of raw material treated.

Belt-fed into the mill, the raw gravel of acceptable size (⅛ in. to 8 in.) enters the separatory vessel containing heavy medium. Stones below the fixed specific gravity of the medium float on top of the cone (or whatever type vessel is used). They overflow a weir to be carried across a vibrating screen under a water spray that washes the medium off. The float material is then wasted.

Stone of acceptable quality sinks to the bottom and is conveyed by an air lift up to the same vibrating screen (divided to keep float and sink materials separate). Most of the medium carried along with the gravel drains from it through the screen and is circulated directly back into the cone.

That medium which has been washed from the product goes through a cleaning process. A magnetic separator lifts the magnetite or ferrosilicon out of the slurry of water, sand and clay that has formed. Clean magnetite (or ferrosilicon) results and is passed on to screw type densifier that dewaters it. From the densifier it drops through a demagnetizing coil and then the medium is ready to be fed back into the cone.

Sizes of units vary widely, as do types. The mill in Manitoba is prefabricated; six men bolted it together in six days. It has a 7-ft cone and a 5-in square pipe from cone to screen. One man with a week's training can run the plant.

• Many sizes, many uses—Other plants—there are now 58 operating and 19 under construction for beneficiation of 16 different materials—vary in size from those treating just a few tons per hour to the new Jones & Laughlin Steel Co. installation at Brownsville, Pa., which handles 2,000 tons of bituminous coal per hour.

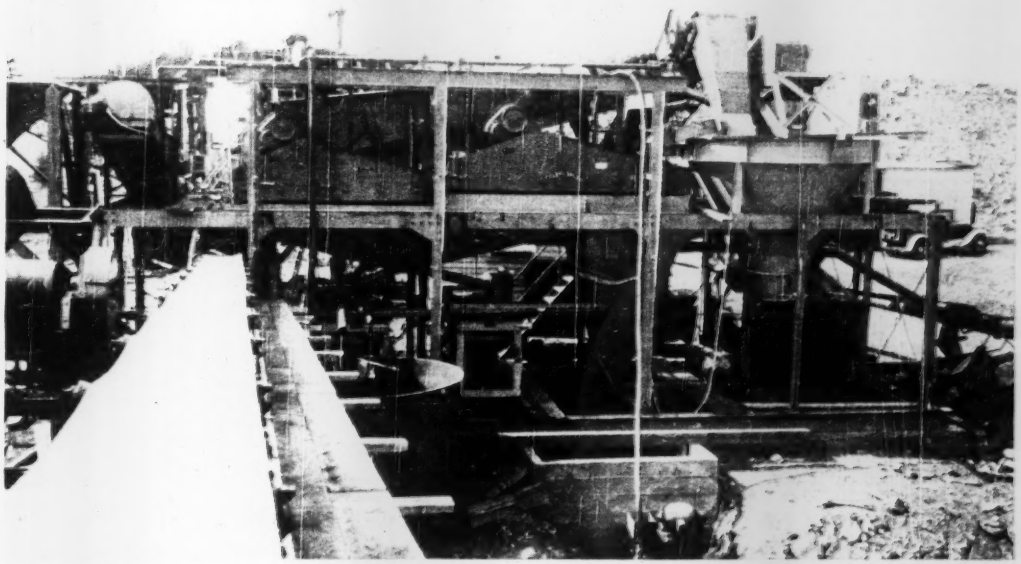
At American Cyanamid's Stamford (Conn.) laboratories the mineral dressing division has a small warehouse full of samples waiting to be tested in the HMS pilot plant. Miners want recommendations on what the process can do for them. Samples come from the world over and range in quantity from a bushel to a carload.

There are relatively few gravel samples being run—maybe two a month come in. Most seekers are producers of rock products who don't want their competition to know they are interested in HMS. So American Cyanamid won't name names of the people who are getting serious about the process.

However, it is public information that the Corps of Engineers had a test made in 1946 for the Omaha soils and materials laboratory on gravel from near Geddes, S. D., under study for Fort Randall Dam. A report on results of the tests, issued in June, 1947, by the Corps of Engineers, went into great detail in evaluating results and concluded:

"The investigation appears to indicate that the proposed process for beneficiating gravel . . . by heavy-media separation is feasible, providing the resulting product will meet durability requirements. . . . It is also important that it be possible to produce the beneficiated material economically as a field procedure."

Proponents of the process are optimistic. They expect its use with gravel to catch on and eventually be second only to coal. As one puts it, "It's just a matter of getting that first olive out of the bottle."



MOBILE MILL treats 100 tons per hour when used on iron ore. Material enters separatory vessel (cone) at right and leaves mill, separated, at left end. (Western Machinery Co. photo)

Metallizing Makes . . .

An Old Water Tank Like New

John F. Wakefield
Metallizing Engineering Co., Inc.
Long Island City, N. Y.

When A. G. Walter, water superintendent of Dunkirk, N. Y., found that the 65,000-gal. elevated wash-water tank at his filter plant was in bad condition, he called in specialists in metallized protection.

As a result, his tank has been made "as good as new" at a cost of $4,126—about $1.60 per sq ft of surface. It was done by grit-blast cleaning and placement of a 0.010-in. zinc coating on the inside of the tank.

The job was far from normal because much extra work was called for to regain structural strength lost through corrosion. Also, two delays resulted from the necessity of utilizing the tank during the job. But for the results accomplished—a tank salvaged and leaks stopped—Walter feels that the unit cost is more than justified. Moreover, the fact that the work could be stopped to permit temporary utilization of the tank was an added advantage.

• **How the job was done**—When corrosion of the tank and standpipe became evident, Walter called in C. R. McElroy, executive vice president of Metal Cladding Inc., Buffalo, N. Y. They arranged to drain the tank at a time that would not interfere with filter-plant operation and make a careful inspection of its interior.

The inspection revealed hundreds of long, deep pits, both in the standpipe and tank—some of these were more than 0.25 in. deep. Welding of the deepest pits was therefore indicated to restore essential structural strength.

Normal cleaning procedure calls for two-step blasting—with fine and coarse grit. But the experts felt that this might open up leaks at points of the worst pitting. So they decided to sand blast lightly, weld up the deep pits and then prepare the surface with coarse-grit blasting just before metallizing.

Metal Cladding's crew—with the help of filter-plant personnel—set up the compressors, blast generators and piping at the foot of the standpipe. And the crew completed the preliminary cleaning of the tank's interior and truss rods in four days. Ottawa flint sand was used in the portable blast-cleaning equipment at 100 psi. This operation opened up a number of leaks that had not been uncovered in visual inspection (mostly at the seams).

It was at this point, Walter recalls, that it became necessary to wash several filter beds. So the tank was filled, the beds washed, and the tank redrained. The work was held up, but no damage done, he says.

• **Pits welded**—The deep pits were then filled by electric-arc welding. Loose rivets as well as lapped seams were also welded. This operation, which took about two weeks to complete, restored much of the tank's original strength and provided a uniform surface for final blasting.

The tank was filled once again at the completion of this step and filters washed in anticipation of final blasting and metallizing.

After the tank was again drained and dried out, the crews started final cleaning operations. This consisted of blasting with a mixture of G-40 and G-18 angular steel grit at 100 psi. This mixture produces a very irregular texture that serves as an anchor for sprayed metal.

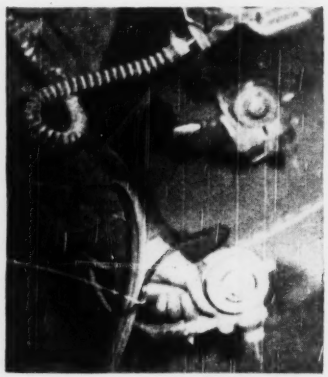
It is important to metallize a surface within four hours after cleaning, so blasting was carried on through an

WHAT IS METALLIZING?

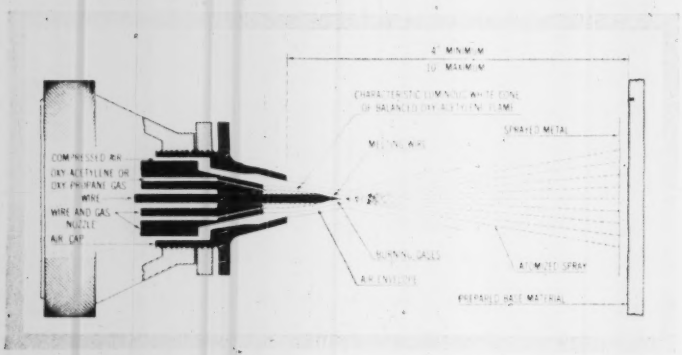
Metallizing is a process by which any metal, available in wire form, may be sprayed on any type of surface, which has been properly prepared. The two most useful metals for corrosion protection are zinc and aluminum, both of which are anodic to iron and steel.

Like any other process for adding or joining metals, metallizing demands a thoroughly cleaned surface. The surface, in addition, must be roughened to provide grounds into which molten particles can key. Cleaning and roughening can be by pressure blasting with abrasives.

Sand and angular steel grit are used for pressure blasting. After use, sand (which cannot be separated from rusty particles) is always discarded but—if it can be recovered—steel grit may be cleaned and used again.



MOLTEN ZINC was sprayed on the interior of the wash-water tank after grit-blast cleaning. Two "guns" speeded coverage of prepared surface.



ZINC WIRE, fed to the center of the nozzle, is melted by oxy-propane (or -acetylene) gas and sprayed onto the grit-blasted surface by compressed air.

8-hr shift. The section cleaned was then immediately metallized by the night crew. This prevents oxidization by collection of moisture on the freshly prepared surface. "Low humidity conditions", says McElroy, "facilitated our work".

"It's important," he points out, "to blast only as much area as can be metallized by the following shift. It's also a good idea to have adequate illumination for blasting because complete and thorough preparation of the surface is essential to successful metallizing. Blasting must be continued until the surface has a uniform dull grey appearance, free from rust, dark spots, and foreign matter."

• **Applying the zinc**—The "weight-area" system was employed for metallizing. This consists of measuring the area to be coated and weighing out enough zinc wire to give 0.010-in. thickness. (It takes about 0.47 lb of zinc wire per sq ft sprayed through the gun to deposit an average thickness of 0.010 in.)

Zinc coating is applied in layers. Each layer is put on at right angles to the previous one. The gun is passed from left to right just fast enough to cover the steel surface with zinc. The next pass is right to left, overlapping the first one slightly. This is repeated until the entire section is covered.

The next layer is applied vertically, the third horizontally, the fourth vertically, etc. until all of the weighed-out wire is deposited.

Total thickness of deposited layers is then checked with an electric gage. This measures depth of non-magnetic material on a magnetic base, an excellent tool for checking thickness of zinc or aluminum. "If we found any spots under 0.008 in.," says McElroy, "we immediately added enough zinc to bring them up to the specified thickness."

Welds, rivets and seams were covered with an extra 0.002-0.003 in. of zinc since such areas are critical.

• **Materials used**—The Dunkirk job consumed 1,400 lb of 14-in zinc wire to metallize the inside tank surface, 15 cylinders of oxygen, and the equivalent of 4 cylinders of propane. (Propane was employed since it was felt that acetylene was not stable enough to run the risk of using it in pipes running from the ground to the tank. The cylinders, in addition, were connected to a manifold to prevent too rapid flow from any one cylinder and to save time of changing from cylinder to cylinder.)

Surface cleaning required about 4 tons of 16-20 mesh Ottawa flint sand and five tons of angular steel grit. All but 500 lb of the grit was recovered on the job.

The tank was cleaned, strengthened and metallized in 22 days: four days for cleaning; nine for welding pits, and nine for final blasting and metallizing. Total man-hours on the job was 546.

• **Service life**—Enough work has been done in the last 20 years to put metallized coatings in a very favorable light. Research into sprayed metals and their properties, in addition, has been carried out on a broad basis during the last six years.

Data—from accelerated laboratory tests, from test panels exposed under actual field conditions and from such service reports as that given herewith for General Mills—have been gathered to predict life expectancies under various conditions. The predicted life of aluminum and zinc coatings under a number of fairly common conditions is given in the accompanying table. The preferred metal for each condition is indicated first with the recommended thickness.

• **Cost**—Based on life expectancies, sprayed-metal coatings are less expensive on a per sq ft per year basis than paints and other common coatings. Sprayed-metal protection for elevated water tanks costs from $1.40 to $1.65 per sq ft depending on type and condition of the surface to be covered.

Similar protection for tanks on ground may cost as low as 50¢ per sq ft. The unit-cost range of corrosion protection then reduces to 2.5¢ to 8.5¢ per sq ft per year (20-yr life expectancy), considerably less than 8¢ to 14¢ for painting and other organic coverings (four times in 20 yrs.) In addition, metallized coatings give electrochemical as well as physical protection.

LIFE EXPECTANCY OF METALLIZED COATINGS

Corrosive Condition	5-10 Years	10-20 Years	20-40 Years	Over 40 Years
Rural Atmosphere		.003" to .005" Zinc	.005" to .007" Zinc	.010" to .012" Zinc
Industrial Atmosphere		.006" to .008" Aluminum .006" to .008" Zinc	.010" to .012" Aluminum .012" to .015" Zinc	.012" to .015" Aluminum .014" to .016" Zinc
Salt Atmosphere	.006" to .008" Aluminum	.008" to .010" Aluminum .010" to .012" Zinc	.010" to .012" Aluminum .012" to .015" Zinc	.012" to .015" Aluminum .014" to .016" Zinc
Fresh Water Immersion	.006" to .008" Zinc .006" to .008" Aluminum	.010" to .012" Zinc .008" to .010" Aluminum	.012" to .015" Zinc .012" to .015" Aluminum	
Salt Water Immersion	.010" to .012" Zinc	.014" to .016" Zinc		

(Source—Metallizing Engineering Co., Inc.)

ZINC COATING IN SERVICE FOR MANY YEARS

In Sept. 1934, two water tanks at General Mills, Inc., Buffalo, N. Y., were inspected and found in bad condition. It was decided to metallize. However, due to the very bad pitting at the water line, patchwork was necessary before the metallizing could be done.

All interior surfaces except the domes were carefully blasted, and coated with .004 in. metallized zinc. At the water line, thickness was increased to .006 in.

Tanks have been inspected yearly, and, until 1947 were in excellent condition. In the 1947 inspection, it was found that the zinc had pretty well dissipated at the water line. The rest of the coating however, was still good in 1949.

At the time these tanks were done, metallizing equipment was rudimentary and hard to operate. There was, moreover, no accurate method of checking coating thickness.

Considering the probable thickness of the zinc, the service life is considered not only highly satisfactory to General Mills, but quite remarkable, to those experienced in metallizing. Most of the coating is still in good condition. Even the water-line section stood up for almost 14 years.

Plan for Quantity and Quality in Lighting

For construction economy and efficient operation, all components of a building must be integrated in the design. That's why if you plan the lighting properly, you produce a better building. Phelps Meaker of the Engineering Division of General Electric Company's Lamp Department presents some fundamental principles to guide you.

IN PLANNING a lighting installation, architects and engineers are confronted with two questions: (1) How many foot candles should be provided for the kind of work the occupants will be performing? What standards of quality—freedom from annoyance, discomfort, glare, shadows—should be applied to lessen the psychological tension of the person doing visual work?

Quantity of light is important. You can see black print on white paper with about 1/100 ft candle, though with difficulty. But if you sew with black thread on black cloth you can barely see the thread under 40 times as much light. You can see big numerals on a wall calendar in dim light across a large room, but you take a telephone book to a strong light.

There is, however, more than candlepower to good lighting. For example, while windows let in abundant natural light, they very often frame sunshine or brilliant, cloudy sky that is many times brighter than any interior wall. Dark frames around the windows make the contrast even more annoying. You can offer some relief by using very light wall finishes.

Ease of a visual task depends on

Size—As the image of an object becomes larger, more minute light receptors in the retina receive an impression of light.

Contrast—Difference in brightness—or in whiteness and blackness—between a detail, such as a printed character, and its background produces a difference in stimulus of adjacent sense receptors. You can't see a black cat in a dark closet.

Brightness—In dim light, differences in stimuli from adjoining dark and light areas are minute, making seeing difficult.

Time—Have you noticed that in hunting for a small object, such as a pin on a rug, you often miss it in a rapid survey and have to make a careful, slower search before you find it?

In most cases, a task is fixed as to size, contrast and time. That's why brightness is so important, for it can be controlled by illumination.

• **High illumination justified**—Many people are accustomed to reading under 10 to 20 ft candles; their eyes rarely complain, unless they are forced to barely see for too long a time. Performance tests, however, have proved that where higher levels of illumination are provided, production increases and errors and spoilage decreases. People doing drafting or clerical work like 60 to 100 ft candles of comfortable lighting, though the benefits are humanitarian and cannot be measured in terms of performance.

Many people like 500 to 1,000 ft candles for reading outdoors. It is possible to provide these levels with artificial light, but only over a limited area. However, people do not like to sit very long in a pool of bright light in a field of comparative darkness.

• **Lighting quality important**—It takes great care to lay out lighting to provide 60 ft candles throughout a room, without shadows, glare, discomfort and annoyance. The light sources themselves may become a conspicuous and annoying part of the environment. Thus, lighting designers must consider the effect of surroundings on the visual and psychological well-being of the occupants, and this involves controlling quality of lighting.

Quality is considered favorable if:

1. Within the limits of the working area, the effort required in seeing does not vary substantially.

2. The surroundings of the work are free from conspicuous masses that compete for attention with the work details.

Condition 1 takes account of shadows and non-uniformity of illumination. Also included is reflected glare—bright images reflected from the work's surface.

Condition 2 considers contrast of background with the work area. When you raise your eyes from your work to look around the room, conspicuously bright fixtures and windows become annoying. A good rule is that work and immediate surroundings should be within three to one of the same brightness.

• **Effect of building design**—If abundant daylight is demanded, there is no substitute for large glazed areas. But illumination levels near the windows are high and taper off rapidly toward the distant walls. This condition can be improved with prismatic

ROWS OF FIXTURES in a drafting room placed parallel to the direction in which the draftsman face are not as annoying as when placed broadside.

glass blocks that bend rays of direct sunshine upward to strike the ceiling over the darker portion of the room. However, when the sun is above or below the angles for which the prisms are designed, the blocks themselves may become very bright. On exposures subject to direct sun, it is usually wise to provide blinds.

Control of window brightness is vital even if occupants do not face windows directly. Different types of blinds and diffusers, adjustable for the need at each particular hour of the day, are required to cut off direct sunshine and break up large areas of sky. Sometimes shades have to be almost opaque to avoid high, diffused brightness under direct sunlight. Considerable help is given by vertical or horizontal vanes outside windows, to intercept sunlight without obstructing the view.

Brightness of artificial light sources of illumination also must be controlled. With ceilings less than 10 ft high, fixtures should have little brightness visible to a person sitting at a distant desk. Also, the tendency for eyes to rest on bright fixtures may be lessened if far walls are well illuminated and provided with large-scale patterns or luminous motifs.

• **Effect of color**—In many rooms, large amounts of light strike walls and ceilings and will be absorbed to an appreciable extent if these are dark in color. Therefore, they should be as light as possible.

An additional benefit accrues from this practice in that the entire environment is thereby lightened, reducing contrast between fixture parts and windows and the surfaces seen adjacent to them. Brightness ratios considered acceptable for various occupations have been published by the Illuminating Engineering Society.

To the lighting specialist, desirable tints are those with certain ranges of reflectance. Ceilings, 75 to 85%; walls, 45 to 65%; desks and furniture, 25 to 35%; and floors, 15 to 30%. Satisfactory trim contrast without obtrusiveness can be achieved with only 15 to 20% difference in reflectance of adjacent surfaces. Reflectance is the percentage of light striking a surface that is reflected.

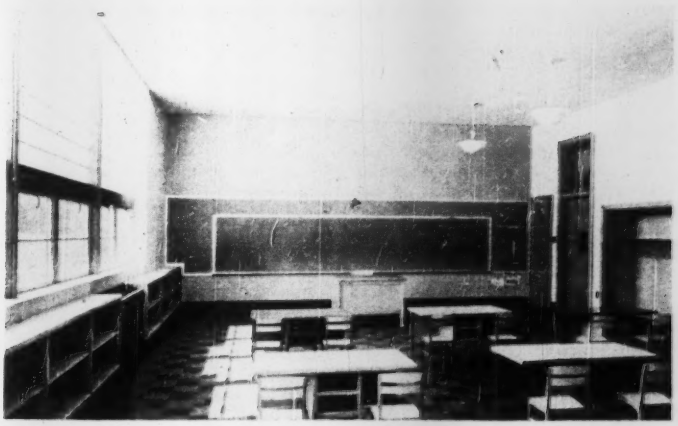
• **Glare factors**—A system of glare factors has been set up to facilitate the study of comfortable brightness in the room environment. Relatively new, these factors enable lighting specialists to predict the order of visual comfort that will be experienced.

Glare factors are derived from an empirical mathematical equation that evaluates the conspicuousness of luminous masses—for the room as a whole is distinct from the actual work area. ("Glare Factors and their Significance," by Ward Harrison and Phelps Meaker, GENERAL ELECTRIC REVIEW, Aug. 1947, p. 31).

Repeated appraisals of interior lighting have shown that when the glare factor does not exceed 15, the lighting will be found comfortable for the great majority of people. As a rough guide, the glare factor may be taken as the percentage of normal people who may be expected to complain about the lighting. For schools, offices and drafting rooms, 30 glare factor may be taken as an upper limit.

Editor's Note—*Two articles to be published in the near future will present methods and data for design of lighting systems and will indicate further, the interrelationship of building design and lighting.*

VERTICAL VANES outside windows of the Petroleum Building in Los Angeles intercept sunlight without obstructing the view.



SCHOOLROOM is well lit near interior walls by light directed by prismatic glass block to the ceiling and reflected down. (Pittsburgh Corning Corp. photo)

BOOK REVIEWS

Beautiful Bridge Book

THE ARCHITECTURE OF BRIDGES—By Elizabeth B. Mock. 127 pp. Published by the Museum of Modern Art, 11 West 53 St., New York. $5.00.

Basically this is a picture book—and a very fine one—but most of its appeal and usefulness resides in the instructive and stimulating captions that Mrs. Mock has written. They are not arty, as is usual in similar books, but strike sensible degrees of emphasis between the necessary anatomy of bridges and their architectural aspects. The captions focus directly on the significant features of each structure, and the pictures have been selected with unusual discernment. Mrs. Mock is on the faculty of the School of Architecture of the University of Oklahoma, but she is also the daughter of Jacob L. Bauer, former state highway engineer of New Jersey, which may account for her special appreciation of the effect of engineering on architecture. The book was produced under a grant to the Museum of Modern Art from the American Bridge Company.

British Highways

THE KING'S HIGHWAY—By Rees Jeffreys. 292 pp. The Batchford Press, London. British Book Centre, 122 East 55th St., New York 22. $4.25.

That the British government has failed in its efforts to provide adequate highways is the outstanding conclusion of a new book, "The King's Highway" by Rees Jeffreys. The book is a critical study of highway development in England during the past 60 years.

Mr. Jeffreys has been in close touch with road-building activities in England throughout most of his life. He was for 10 years chairman of the Roads Improvement Association, a private organization active in promoting good roads at the turn of the century. When the British government took a hand in road improvement in 1910 with the establishment of the Road Board, Mr. Jeffreys became the secretary of the board. Since his retirement from government service in 1918 he has actively participated in several International Road Congresses, one of which was held in Washington in 1930. David Lloyd George described Mr. Jeffreys in 1937 as "the greatest authority on roads in the United Kingdom".

The book points out that "the Ministry of Transport . . . has failed to provide an adequate and safe 'road system'". The author analyzes reasons for this failure and gives his own basic principles which he feels must be accepted if the highway systems of England, Scotland, Ireland, and Wales are to meet the needs of the future. He also describes trends in highway surfacing, location, design, and bridge construction from the English point of view.

Mr. Jeffreys feels that a study of highway finance and taxation should be undertaken to provide an equitable basis for distributing highway costs between road users and property owners. He believes that highway user revenue should be devoted to highway construction and improvements. That this has not been done is one reason for the ministry's failure to solve the road problem, in his opinion. He lists four factors which have hindered the ministry in its highway improvement attempts:

1. Highway policy in the past has been governed largely by political considerations.

2. No first class administrator was ever appointed Minister of Transport.

3. Railroad interests opposed government assistance in highway improvements.

4. The control exercised over transport finances by the Treasury has prevented the expenditure of funds on any long-term plan for highway development.

Another difficulty encountered in improving highways in Britain is due to the lag in mechanization of construction equipment and methods. The British government has used road work in the past as a means for alleviating unemployment and, hence, has officially discouraged any moves which might result in the displacement of workers.—Reviewed by THOMAS H. MACDONALD, Commissioner of Public Roads, Bureau of Public Roads, Washington, D. C.

Pioneer Builder

UNCLE JOHN—Dauntless Pioneer and Man of Vision—By J. L. Allhands. 187 pp. The Naylor Company, San Antonio 9, Texas. $2.95.

This book, written by a pioneer contractor who had a part in the development of Texas, is about another of the pioneers in the opening of a large area in Texas, Uriah Lott. Lott began his pioneering ventures in Texas in Corpus Christi in 1866 and five years later began construction of a narrow-gage railway westward toward Laredo. Subsequently he played a major part in the construction of other railroads and in the development of the Rio Grande valley in Texas.

One chapter is devoted to Sam A. Robertson, a famous Texas contractor who worked for and with Lott in many of his ventures. Many engineers who were in France during World War I will remember Col. Sam Robertson as a picturesque figure on railway construction work for the First Army.

Floods and Flood Control

FLOODS, THEIR HYDROLOGY AND CONTROL—By H. K. Barrows. 452 pp. McGraw-Hill Book Co., New York, Toronto and London. $6.50.

Although primarily written for advanced students, this volume contains a wealth of information concerning floods, their hydrology, and the design of flood control works of direct value to practising engineers. Recognizing that the wide range of conditions to be met in flood-control engineering can be made clear best by reference to actual examples, the author has done well to devote one-third of his treatise to descriptions of existing flood-control projects taken from all parts of the United States. Works on the Mississippi River and on its principal tributaries, which include the Missouri and Tennessee rivers, cover 110 pages.

The trend toward multiple-purpose reservoirs in which power development often is a dominating feature, is well covered. Under the head of Notable Floods, 14 disastrous floods are described, ranging from flashfloods on small streams to major floods in large rivers, thus illustrating the many causative factors introduced by climate, topography and local conditions.

Structural design and cost data derived from existing projects are given in considerable detail, supplemented by excellent illustrations. The merits as well as the limitations inherent in each of eighteen different formulas for estimating probable maximum runoff, are discussed at some length. Included are the earliest devised by American engineers, which though only approximate, still have their uses in regions deficient in hydrologic data, as in Central America. Flood-loss statistics are presented in tabulated form, and for more general visualization in a logarithmic plot showing average flood losses per square mile for drainage areas ranging from 200 sq mi to 100,000 sq mi. A curve approximating the "usual limit in flood control losses" is of especial interest.

Two chapters on the economics of flood control and the important role played in the United States by federal legislation, fittingly complete the treatise. Throughout, the text as well

as the illustrations reveal a high order of care in the selection of material. The author's natural gift for presenting technical matter in lucid and concise terms makes for easy reading to a degree not often found in engineering texts.—Reviewed by GERARD H. MATTHES, Consulting Hydraulic Engineer, New York.

Subsurface Exploration

SUBSURFACE EXPLORATION AND SAMPLING OF SOILS FOR CIVIL ENGINEERING PURPOSES—By M. Juul Hvorslev. 521 pp. Final report of a research project of the American Society of Civil Engineers, sponsored by the Engineering Foundation, Harvard University and the Waterways Experiment Station. Obtainable from the Engineering Foundation, 33 W. 39th St., New York, 18, N. Y. Price $4 to members of the Founder Societies; $6 to others.

A vast amount of scattered information on methods and equipment for determining the character and condition of the soil underlying the site of a proposed engineering structure has been assembled in usable form in the large book. Part I covers the general procedure and requirements for underground exploration, including brief descriptions of the many methods from the use of simple sounding rods to seismic and electrical subsurface exploration. Also considered are ground-water observations, various types of soil sampling methods, and soil type. Part II gives details of sampling equipment and methods and outlines proper methods for handling soil samples. Included is a section on sampling in search for oil and minerals. A large bibliography provides much reference material to supplement the text.

Harbor Structures

THE DESIGN, CONSTRUCTION AND MAINTENANCE OF DOCKS, WHARVES AND PIERS—By E. M. DuPlat-Taylor. Third Edition, revised and enlarged. 543 pp. Ernest & Spottiswoode, Publishers, London. Price 58/-. Obtainable through Sechert-Hafner, Inc., 31 East 10th St., New York 10.

There are too few books on the design and construction of harbor structures. Of those that have been published, probably the best known is this work of E. M. DuPlat-Taylor, which was published originally in 1927. A second edition appeared in 1934, and this latest edition was in preparation when the war put a stop to the work.

Structures built during the war are among the additions, principally the war harbors and the drydocks at Capetown and Sydney. There also is considerable new material on the application of soil mechanics theories to the design of waterfront structures. Thus, the section on the design of dock walls has been entirely rewritten.

Structures described are chiefly in British waters and on the Continent, but a few projects in this country are described.

No one writes about harbor works with more authority than E. M. DuPlat-Taylor who for 20 years played a leading part in the design and construction of the great docks serving London. Now in his 72nd year, he states in the foreword that future editions will be in the hands of Cecil Peel who contributed the new chapters on dock wall design.

Fee Contracts

CONTRACTING AS A PROFESSION—By Frederick W. Lord. 83 pp. Richard R. Smith Publisher, Inc., 120 East 39th St., New York 16. $2.

In this little book the author, who until his retirement had served for over 50 years as president of the Lord Electric Co., proposes to put all contracts for construction work on a negotiated fee basis. He would have the negotiated fee apply not only to the general contract but also to the main specialty subcontractors, such as electrical work, plumbing and heating, each of whom would contract separately with the owner to do his part of the work at actual cost plus a negotiated fee. The general contractor, as the owner's representative, would select the subcontractors and negotiate with each as to his fee.

Miscellaneous Notes on Booklets and Reprints

A SUMMARY OF RESEARCH OPERATIONS being carried out by some of the principal military and non-military federal agencies makes up the major part of the 1949 Proceedings of the annual meeting of the Engineering College Research Council (College of Engineering, State University of Iowa, Iowa City). The remainder of the pamphlet is given over to the papers that were presented at the meeting, which was held in Troy, N. Y., last June.

FORMULAS AND DATA for computing torsional stresses are given in a 21-page pamphlet, "Torsional Stresses in Structural Beams." (Booklet S-771, published by Bethlehem Steel Co., Bethlehem, Pa. Based on a paper by Inge Lyse and Bruce G. Johnston "Structural Beams in Torsion," Trans. ASCE, Vol. 101, p. 857), the tabulated torsional properties of beams are exact, but the formulas for stress are inexact, though claimed to be adequate. These data replace constants formerly given in the Bethlehem handbooks in the Thirties and then withdrawn when found inaccurate.

HELPFUL SUGGESTIONS FOR BUILDERS are offered in a 156-page booklet, "Home Builders Manual for Land Development," which may be obtained for $2.50 from the National Association of Home Builders, 1028 Connecticut Ave., NW, Washington 6, D.C. It includes such topics as selecting land for small subdivisions, cutting development costs, water, sanitary and road systems, site planning for apartments and small home and tips on landscaping.

New Engineering Book

APPLIED SEDIMENTATION—By Parker D. Trask. 707 pp. John Wiley & Sons, New York, 16; Chapman & Hall, London. $15.00.

A.S.T.M. STANDARDS ON PAINT, VARNISH, LACQUER, AND RELATED PRODUCTS—671 pp. Published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $4.85.

SUBSTRUCTURE ANALYSIS AND DESIGN—By Paul Andersen. 305 pp. Ronald Press Co., New York. $4.50.

STRENGTH OF MATERIALS—By James I. Bord and Samuel B. Folk. Fifth Edition. 417 pp. McGraw-Hill Book Co., New York, Toronto and London. $4.00.

INFLUENCES ON CONCRETE—By A. Kleinlogel. Translated from the German by F. S. Morgenroth. 281 pp. Frederick Ungar Publishing Co., New York. $7.50.

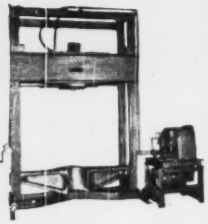
TAXES AND ECONOMIC INCENTIVES—By Lewis H. Kimmel. 217 pp. The Brookings Institution, Washington, D. C. $2.50.

HIGHWAYS IN OUR NATIONAL LIFE—A Symposium. Edited by Jean Labatut & Wheaton J. Lane. 506 pp. Princeton University Press, Princeton, N. J. $7.50.

THE ELEMENTS OF LETTERING—By John Howard Benson and Arthur Graham Cross. 155 pp. McGraw-Hill Book Co., New York, Toronto and London. $3.75.

ARCHITECTURAL DRAWING—By Shirley W. Morgan. 227 pp. McGraw-Hill Book Co., New York, Toronto and London. $7.50.

WARM AIR HEATING AND WINTER AIR CONDITIONING—By John W. Norris. Second Edition. 320 pp. McGraw-Hill Book Co., New York, Toronto and London. $6.50.



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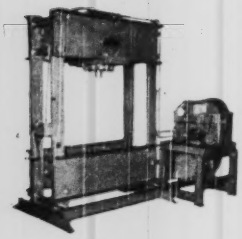

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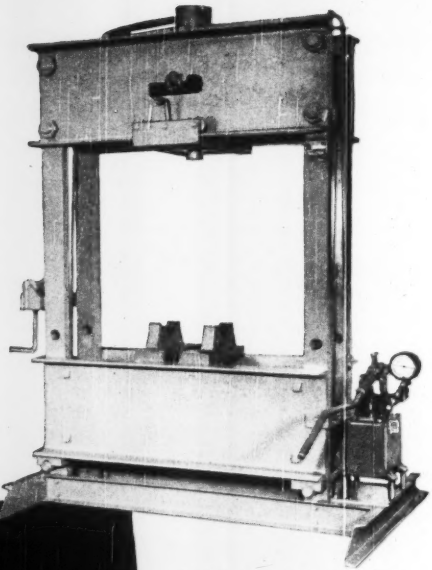

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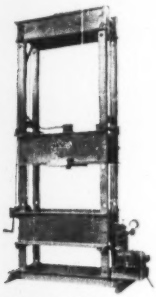

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HYDRAULIC POWER EQUIPMENT

READER COMMENT

Prestressed Concrete Methods

Sir: We were astonished to read the letter from Curzon Dobell, vice president, The Preload Corp., New York (ENR March 9, 1950, p. 84) in which the claim is made that The Preload Corp. had a free choice between two methods of prestressing at the time that bids were called for the construction of the Walnut Lane Bridge in Philadelphia. We feel that we must point out that neither the corporation, nor Mr. Dobell, have held licenses for patents which would permit them to use the Freyssnet post-tensioning method described in the latter part of his letter and to which he attempts to attribute numerous disadvantages.

L. Coff, consulting engineer in New York, pointed out clearly in his article (ENR Sept. 1, 1949, p. 185) the two jacks most commonly used in tensioning and anchoring. These jacks were referred to by Mr. Coff as the double-acting jack used by Freyssnet and Magnel's jack. The Preload Corp. was granted the license to use the Magnel technique, but Mr. Dobell's statement is erroneous when he claims to have been free to use the Freyssnet technique.

R. de Lubersac,
Director
Societe Technique pour l'Utilisation de la Precontrainte (S.T.U.P.)
Paris, France

Slab Formulas Too Safe

Sir: The editorial in ENR May 4, p. 21, headed "Wanted: Better Flat Slab Formulas," is a plea for economy that should receive proper attention from speculation and code writers.

In these flat designs, the control on slab thickness is the allowable shear value around the column perimeters; the empirical slab ratios are disregarded. Economy of construction dictates that this thickness be kept constant over the entire slab area, even though a lesser depth of slab is sufficient for concrete stress limitations. Then, it is found that the minimum steel reinforcement limitations, which are always given as a function of the concrete cross-section area, really control most of the reinforcement in the slab. Rather low steel stresses result.

For instance, in the ACI Code, Sect. 707(a) limits the minimum shrinkage and temperature reinforcement as a ratio of the actual concrete section, and the same limitation is given as a minimum reinforcement for the principal reinforcement (Sect. 702(e)4 and 710, for one-way and two-way, supported slabs), with double that amount as negative reinforcement at the outer end of members (Sect. 702(e)2).

The results of a full-scale load test made at the Quebec Houses project (ENR May 4, p. 34) as a check on computed deflections proves how over-conservative are design methods. The design load was 60 psf (includes an allowance of 20 psf for partitions). A full panel was loaded to 100 psf. There being no load on the adjacent panels, the deflection should have been more than that computed.

The actual measured deflection was 0.014 in. with full recovery upon removal of the load, the total load of slab and surcharge being then 178 psf. The computed deflection was many times 0.014 in., and since no deflection formulas are accurate (or reasonable) for reinforced concrete designs, the writer hesitates to give his guesses of that value, except to state that it was approximately equal to the ACI Code limitations under test loads: Under Sect. 202(a), with a superimposed load of 150 psf on the 6½ in. slab, a deflection of 0.362 in. would be considered satisfactory, with a permissible residual deflection 60% of that.

Jacob Feld
Consulting Engineer
New York, N. Y.

Peak-Hour Traffic Problem

Sir: "Park at Your Desk" sounds O.K. but what about traffic congestion when leaving?

In ENR May 11, p. 45, your article on "Park at Your Desk" office building to accommodate 450 autos on 27 levels immediately raises the question of leaving the building when work is done. It seems entirely possible that as many as 400 autos may want to leave at the same time, say around 5 pm. No doubt street traffic is also heavy around this time. Has the street planning been integrated with the building plan so as to provide a smooth uninterrupted flow of traffic to and from the building for as many as 400 cars during rush hours?

Since this is not mentioned in your article it would be interesting to know what plans have been made to make this scheme practicable, or whether the street planning has just been left to somebody else. That, we all know, has happened too often before.

Charles Courtney Simpson
Structural Estimator
The Lummus Co.
New York, N. Y.

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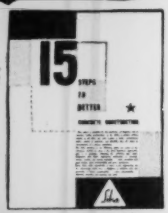

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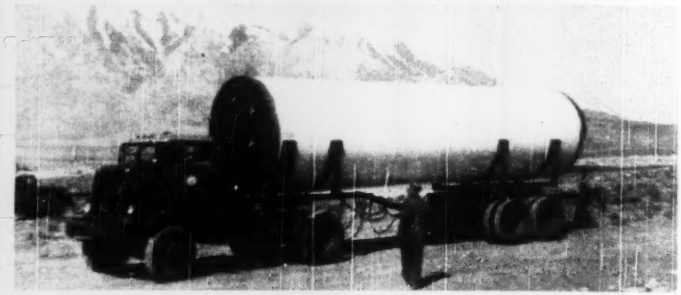


TWO PAIRS of flexible steel bands adjust themselves to 120-deg contact on this 50,000-lb section of 92-in. pipe for a 300-mile trip from Los Angeles to one of three Owens Gorge hydroelectric plants. Some 920 sections are being transported in this way.

Special Trailers Haul Pipe Sections

The pipes consist of a total of some 7,000 tons of steel made up into sections whose diameters range from 92 to 120 in. with plate thicknesses varying from ¾ to 1⅛ in.

The Owens Gorge power project of the Los Angeles Department of Water & Power is a 112,500-kw hydroelectric development about 300 miles north of Los Angeles on the eastern side of the Sierra Nevada Mountains. Three power plants now being constructed at very similar sites in the gorge are designed to utilize net effective heads of 748, 771 and 736 ft, respectively. These plants will be served by a combination of tunnels with steel liners and steel penstocks for which pipe sections are now being delivered to the job from fabricating plants in Los Angeles.

Laying a Light-Weight Outfall

The contractor made money and the engineers got a good job when an outfall was recently built from the sewage treatment plant in Ocala, Fla. The low bidder's price on the 3,220-ft gravity pipeline was $12.10 a ft. And the contractor's men on the job figured to do it for $7.15—$4.65 for pipe and $2.50 for laying, but they put it down for considerably less.

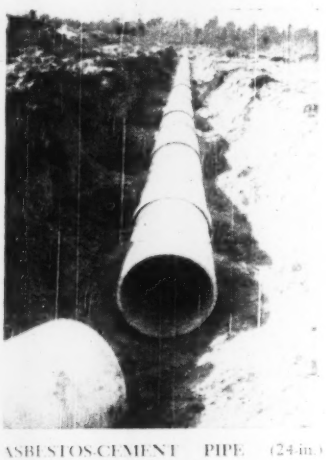
The pipeline was 24-in. asbestos-cement with collar-covered poured joints.

Excavation was by a backhoe, backfill by a truck-mounted clamshell.

One foreman and five laborers graded the trench and placed and aligned the pipe. Another crew of the same size placed friction tape over butted ends of pipe, centered collars over butts, placed clay-seal joint runners on both sides of the collar and poured jointing compound under the collars.

Leaks in the friction tape were sealed up on the inside with moist clay. When leaks appeared, the adjacent unpoured pipe was moved and a laborer crawled to the leak and plastered it up. The joint was then jointed and the pipe replaced. This proved to be cheaper and better than breaking the collar and replacing the friction tape.

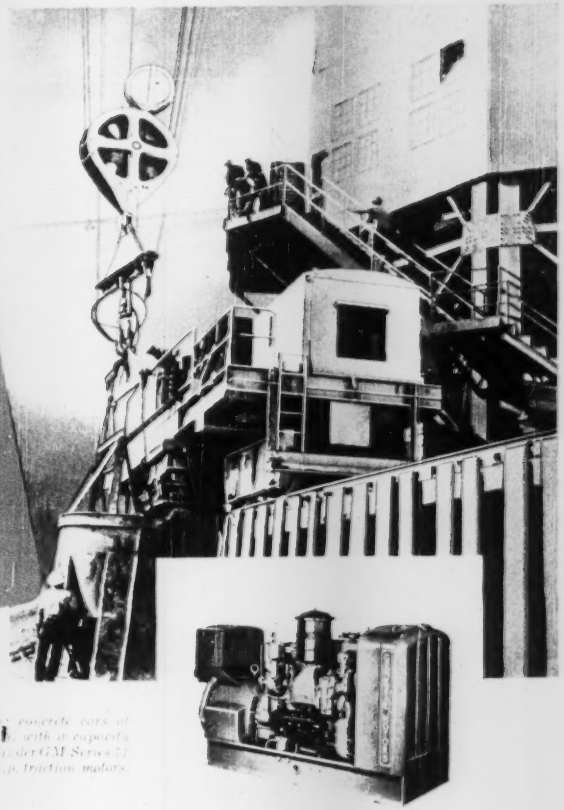
The project is under the supervision of Russel and Axon, consulting engineers of Daytona Beach. Construction is being done by F. H. McGraw Co. of Hartford, Conn.



ASBESTOS-CEMENT PIPE (24-in.) stretches from the Ocala, Fla. sewage plant to lagoons where the highly purified effluent leaches into the soil.

A CONCRETE Case for

GM DIESEL POWER



Built by Washington Iron Works, Seattle, the concrete cars at Hungry Horse Dam have a top speed of 5 m.p.h. with a capacity payload of 12 tons. Each is equipped with a 2-cycle GM Series 71 Diesel generator set furnishing power to two 20-h.p. traction motors.

THREE specially built Diesel-electric concrete cars, used by the General-Shea-Morrison group at Hungry Horse Dam, are a vital link in the carefully planned facilities with which the contractor expects to place a million cubic yards of concrete this year.

Carrying two 8-yard side dump hoppers, the cars move concrete from the mixing plant to points directly under cableways where they discharge into buckets. This eliminates time lost moving buckets on and off cars—saves travelling time of the 500-ton cableway tail towers—increases cableway capacity by at least 25%.

It's a job that calls for smooth coordination. There can be no failure or falter. Shutdowns would be costly. So General Motors Diesel generator sets were a natural choice to power these cars.

Because they are 2-cycle, with power at every downstroke, GM Series 71 engines are compact, smoother in operation and quicker starting. They are designed for easier servicing; have no high pressure fuel lines and offer maximum interchangeability of parts.

Add to these advantages their higher power-per-pound, their economy and rugged durability, and you'll see why contractors everywhere are turning to GM Diesels. Get the full story from your local equipment dealer or write direct to us.

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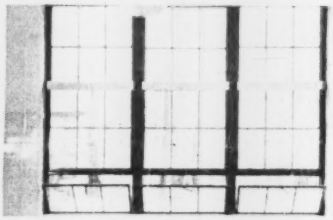
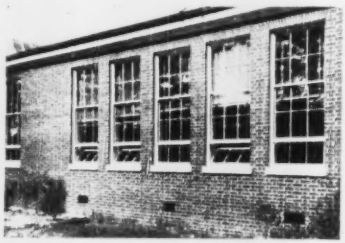
SILL. Double step design forms two-point weathering contact with sash.

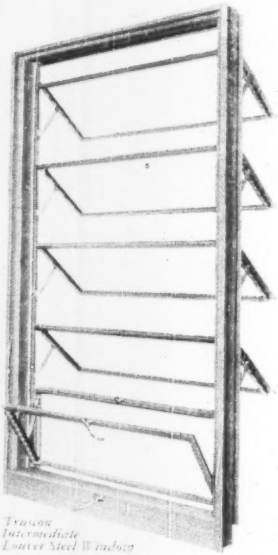
Truscon Series 138 Double-Hung Steel Window



The generous use of nature's free sunlight and fresh air is possible with these durable Truscon Steel Windows.



Truscon Series 138 Double-Hung Steel Windows in Southern Pines School, Southern Pines, N. C. Laxton Construction Company, Charlotte, N. C., Contractors. William Henry Deitrick, Inc., Architects, Raleigh, N. C.



Truscon Intermediate Louver Steel Window

...extremely *attractive* in price

The building world needed windows so strong, so efficient, so moderately priced that they would be adaptable to a wide range of construction requirements. Truscon applied all its exceptional facilities to the problem—great experience in windows, expert engineering talent, tremendous manufacturing facilities. Result: the Truscon Series 138 Double-Hung Steel Window and the Truscon Intermediate Louver Window—now widely used in residential, school, institutional and commercial structures! Due to the wide range of standard types and sizes offered, and the availability of integrally built sill ventilators, the designer can create a distinctive window arrangement exactly to meet any particular requirements. Modular standards employed throughout. Write for illustrated literature giving complete details.

FREE Book on Truscon Steel Windows. Write for it. The Truscon Steel Company Manufactures a Complete Line of Residential Double Hung Windows . . . Residential Casements . . . Security and Basement Windows . . . Screens and Storm Sash . . . Metal Lath Products . . . Industrial Steel Doors . . . Coal Chute Doors . . . Steel Lintels . . . Concrete Bars . . . Welded Steel Fabric.

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DEVELOPMENTS ABROAD

MEANDERING RIVER CORRECTED—Engineering work similar to the cutoffs along the lower Mississippi has just been completed on the main Papaloapan River, heart of Mexico's $143,000,000—power and irrigation project. Six cutoffs have been made to aid transportation and flood control. Highways and airfields are being built in the area and the port of Alvarado is being dredged. Contracts have been let for the first work on the President Aleman Dam which will store about 40,000,000 acre feet. Eventually a 4-dam system is expected to produce 500,000 kw. Incidentally, the photograph shows an excellent example of meandering, the word derived from the Macander River in ancient Phrygia, Asia Minor.—Mexicana Areofoto.

BRICKS FROM RUBBLE—Hundreds of thousands of bricks, processed from rubble, wait to be sent out from a new plant at Frankfort-on-Main, Germany. Molded in different sizes, the bricks are used in reconstruction of the war-damaged city. The first step in the manufacture is to free the rubble from the wood, iron, glass, and marble. The old bricks are then ground up and processed. The plant works day and night and employs 950 men. In a month it turns 45,000 tons of rubble into 3,000,000 bricks. In the last three months 6,500,000 of the bricks went into the construction of a U. S. High Commission community which is being built in that city. —Wide World photo.

Foreign Briefs

Power, irrigation, drainage—A $5,000,000 project to build electric, irrigation, and drainage stations in Nag Hamadi, sugar cane producing area of Southern Egypt, has been entrusted to the French firm Comptoir des Entreprises Electriques, in association with the German Siemens concern. Osman Moharram Pasha, Minister of Public Works, said the offer of these two companies was the most advantageous to Egypt. The project includes the building of a central electric power house with Diesel engines, the construction of irrigation pumps near Nag Hamadi, a pumping station, and electric lines to feed the irrigation and drainage stations.

New Zealand paper mill—The Dominion of New Zealand is preparing plans for a pulp and paper mill at Murupara in the Bay of Plenty zone to produce 400 tons of newsprint daily, 50 tons of surplus pulp and 300,000 bd. ft of sawn timber. The New Zealand Forest Products Ltd. also is preparing plans for a $3,000,000 chemical wood pulp mill at Tokoroa to have a capacity of 25,000 tons of pulp annually.

Italy's first prestressed bridge—The first Italian bridge made of prestressed concrete has just been completed at Persiceto to carry the Bologna-San Giovanni road over the Samoggia River, replacing a metal bridge destroyed in the war. The bridge has ten cross-beams in pre-compressed reinforced concrete resting on piles on opposite banks of the stream. It has a span of 91 ft. and a width of 33 ft. The new method of construction represents a saving of 22 percent in concrete and of 60 percent in steel.

Ducts in concrete—The Freyssinet organization in Paris recently has been carrying out some experiments with an American-invented rubber tubing which can be used to form ducts in concrete through which prestressing cables are subsequently threaded and tensioned. This tubing is fitted at one end with an ordinary auto tire valve and normally is inflated to a pressure of about 40 psi. The tube, which has an external diameter of $\frac{5}{8}$ in. deflated is suitable for use with 12 to 18-wire Freyssinet-type cables and anchorages. In one experiment, a 13-ton beam containing 130 ft of 12 and 18 wire cables was cast using these tubes. It was found that with wiring at about 4-ft intervals, the inflated tubes were rigid enough to hold the curvature or straightness required of them. A few hours after concreting the beam, the tubes were deflated, lengthened, untwisted and easily withdrawn.

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Tough 1/4-in. steel line gives strength with minimum wind resistance. One-reading detachable front frame for cleaning or drying. Four arm nickel plated frame with handle that locks line at any point. Buy the best — buy the *Peerless* — see them at your Supply House today.

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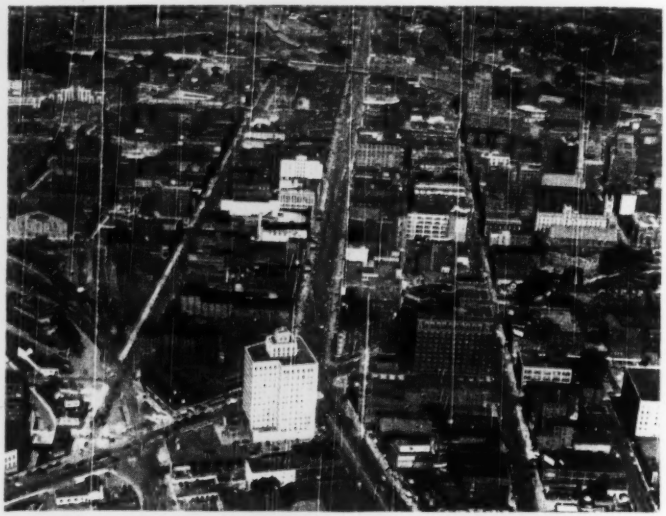
MUNICIPAL AFFAIRS



THE HEART OF SYRACUSE—The business section of Syracuse with Salina Street (Its name reminiscent of the salty origin of the city) running north and south. The light-colored building in the foreground is the Hotel Syracuse. Just to the right of it is the Onondaga Hotel. Crossing North Salina Street in the background is the elevated structure of the main line of the N. Y. Central R.R. For many years the railroad tracks ran on Washington Street through the heart of the city. The tracks were relocated and raised, and a new station built. In the left foreground is the Delaware, Lackawanna & Western Railroad. In the right foreground is the site of the new war memorial auditorium.

Syracuse war memorial top city project

With a $3,500,000 municipal war memorial under way in the heart of the downtown business district, Syracuse, N. Y., builders are pushing a heavy construction program to keep pace with their fast growing, bustling city.

The 9,000-person-capacity auditorium leads a building program that includes hundreds of housing projects, a VA hospital, and numerous factory and store structures for one of the busiest industrial centers in the United States.

In addition to its seating capacity, the auditorium will provide 90,000 sq ft of exhibit space, and can be adapted, among other things, to become an ice rink with seating capacity of 6,800 spectators.

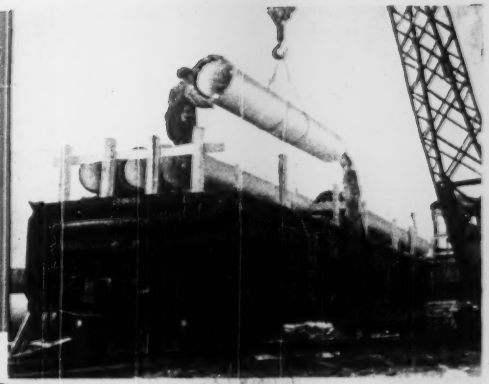
Situated in the center of New York State, Syracuse now has a population of more than 225,000, having doubled in the last forty years. Its early rapid growth was due to the discovery of the salt springs there and the development of the Erie Canal, but its later development is the result of its central location in the Empire State and the fact that it is the hub of railroad and highway transportation and has become one of the leading industrial centers in the East.

The salt business, which gave Syracuse its start, is no longer in existence there, but in its place has grown a large group of modern factories employing 52,000 workers, making diversified products amounting to $200,000,000 worth annually.

Syracuse is a leading city in the manufacture of air conditioning machinery, typewriters, air cooled engines, tool steel, automobile gears, differentials and transmissions, cans and can making machinery, roller bearings, soda ash and by-products, fine wax candles, agricultural implements, high class chinaware, mincemeat, shoes, electrical appliances and hardware, washing machines, clothes pressing machines, foundry and machine shop products, electronic equipment, and many other products.

Onondaga County is one of only 33 out of the more than 3,000 counties in the United States where every major classification of industry as defined by the U. S. Department of Commerce is represented.

16" and UP



If your requirements call for transmission or distribution mains of 16" diameter or larger, Lock Joint Pipe Company can provide high quality concrete pressure pipe in all standard diameters and some intermediate sizes. Starting at a minimum of 16", Lock Joint Concrete Pressure Pipe is produced in 32 different diameters, and its four distinct types of structural design cover every working condition common to American water works practice.

Not only does Lock Joint Concrete Pressure Pipe qualify fully under A W W A specifications, but it alone embodies, in a conventionally designed pipe priced to meet competition, all the nine time-tested characteristics listed at right:

- PERMANENT HIGH CARRYING CAPACITY
- PROOF AGAINST TUBERCULATION, CORROSION AND ELECTROLYTIC DAMAGE
- IMMUNITY TO RUPTURE OR BLOW-OUT
- SAFETY UNDER EXTREME EXTERNAL LOADS
- EVERY JOINT FLEXIBLE AND WATERTIGHT
- EASILY TAPPED
- SPECIALS TO MEET INDIVIDUAL SPECIFICATIONS
- USEFUL LIFE CONSERVATIVELY ESTIMATED AT 100 YEARS
- MINIMUM MAINTENANCE AND REPAIR COSTS

Whether your proposed line is large or small it will pay you to use Lock Joint Concrete Pressure Pipe, the pipe of proven durability, economy and dependability.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

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Reinforced Concrete
PRESSURE PIPE

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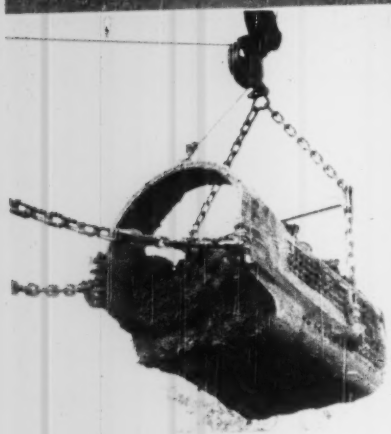
ON EVERY JOB WITH

HENDRIX DRAGLINE BUCKETS



When you use a Hendrix Dragline Bucket you never have to worry about output in any kind of digging . . . hard or soft! Those parts of a bucket which take the brunt of abuse and normally wear the most are of cast manganese steel insuring long-life and trouble-free operation.

If you're up against a difficult digging job, you need a HENDRIX . . . built to take it and built to give you low-cost, maintenance-free performance day in and day out!

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Court actions may delay Dallas improvements

Dallas, Tex., and its housing authority have filed a suit in the local district court to determine the legality of the federal aid program in Texas. This must be determined by the Texas Supreme Court before the federal government will grant any more loans for the slum-clearance program in the state.

The sale of the first $6,000,000 worth of bonds of the $22,500,000 road bond issue voted by Dallas County last January has been cancelled because of two lawsuits filed by Horace G. Edwards in the district court. He is seeking to obtain a permanent injunction against the issuance of the road bonds because it is planned to use $5,679,000 of the issue to finance street improvement within the city of Dallas.

Cancellation of the bond sale will cause the county to lose the low interest rate of 1.74 percent and it will have to wait till the lawsuits are settled before it can readvertise for bids on the bonds and start work on the $22,500,000 road improvement program.

Municipal Briefs

Albuquerque improvements—Voters of Albuquerque, N. M., have approved eight bond issues for improvement projects totaling $5,675,000. More than $5,000,000 will go for water and sewer extensions. Work will start about June.

Richmond street face-lifting—A $278,000 face-lifting job on Broad Street, Richmond, Va., between 12th and Laurel Sts. for the 1950-51 fiscal year is in the city planning commission's recommended capital improvement program. The work involves resurfacing, removal of tracks and center poles, and new street and traffic lights.

Budget reduction—An order to cut its budget by at least 10% for the 1950-51 fiscal year has brought a protest from the Los Angeles city inspector's department, which claims public and private builders would lose millions annually if its staff is reduced. City Inspector Ted Niederhoffer told the city council that "damages and costs resulting from poor construction through lack of inspection will run into millions." Private contractors, he said, would have to increase bids if inspectors were not available at all times. City ordinances require the presence of an inspector during the construction of public works.

The Ninth of a Series in the interest of more efficient use of steel . . . a vital American resource

LACLEDE MULTI-RIB REINFORCING BARS

NOW . . . Available by Number in Standard Sizes of New A.S.T.M. Serial Designation A305-49 Table I

Thanks to A. S. T. M. specification A305-49, designers now have a more efficient bar for concrete reinforcement . . . one that provides **increased anchorage** which when properly used will give appreciable **savings in steel and concrete.** Advanced design Laclede Multi-Rib Reinforcing Bars exceed the A305-49 specification. They are available in uniform round sections in all standard sizes and can now be ordered by number.

TABLE I A.S.T.M. SERIAL DESIGNATION A305-49

Dimensional Requirements for Deformed Steel Bars for Concrete Reinforcement

Bar No.[2]	Unit Wt. Lbs. Ft.	NOMINAL DIMENSIONS ROUND SECTIONS Diameter-Inches Decimal	Cross Sectional Area Sq. Inches	Perimeter[1]	REQUIREMENTS OF DEFORMATIONS Max. Avg. Spacing Inches	Min. Height Inches	Max. Gap, Inches[1]
3	0.376	.375	0.11	1.178	0.262	0.015	0.143
4	0.668	.500	0.20	1.571	0.350	0.020	0.191
5	1.043	.625	0.31	1.963	0.437	0.028	0.239
6	1.502	.750	0.44	2.356	0.525	0.038	0.286
7	2.044	.875	0.60	2.749	0.612	0.044	0.334
8	2.670	1.000	0.79	3.142	0.700	0.050	0.383
9*	3.400	1.128	1.00	3.544	0.790	0.056	0.431
10*	4.303	1.270	1.27	3.990	0.889	0.064	0.487
11*	5.313	1.410	1.56	4.430	0.987	0.071	0.540

*These sections have the same weight and area as bars formerly known as 1" Sq., 1⅛" Sq. and 1¼" Sq.
‡Chord of 12½% of Nom. Perimeter.
[2]Bar numbers are based on number of ⅛" included in the nominal diameter of the bar section.

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About specifing LACLEDE MULTI-RIB BARS on your jobs

LACLEDE STEEL COMPANY
St. Louis, Mo.
Producers of Construction Steel

Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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treatment with DU PONT COPPERIZED CZC

You'll think of wood as a *different* structural material after it's pressure-treated with Du Pont Copperized CZC. And here's why. Copperized CZC gives long-lasting protection against termites, fire and decay *without changing* the inherent structural characteristics of wood.

This salt-type wood preservative makes lumber and timber unpalatable to termites . . . kills decay-causing fungi . . . gives a high degree of fire retardance. Copperized CZC does all this while leaving wood clean, paintable, odorless and safe to handle. Sound reasons why you should specify pressure treatment with Du Pont Copperized CZC.

Full technical details on Copperized CZC available for the asking. Write: E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Delaware.

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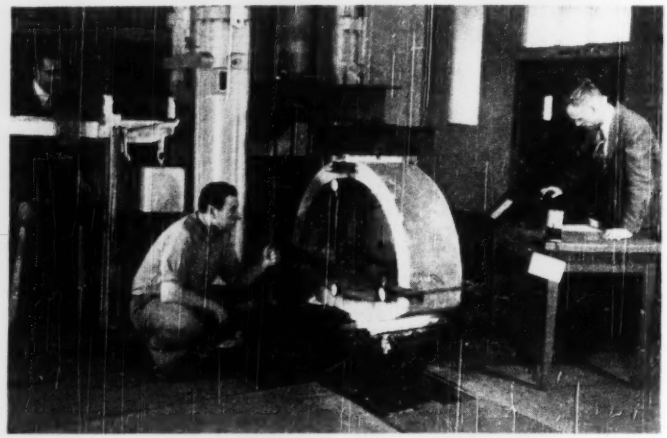


TESTS ON CULVERT PIPE—Civil engineering students at Carnegie Tech study behavior of a basket-handle form of culvert. Left to right, Prof. J. W. Graham, Jr., who supervised the structural study, and A. K. Oechsle and N. F. Coates, seniors. Parallel hydraulic studies were made by T. E. Stelson under the direction of Prof. E. F. Mavis.

J. K. Finch retires as dean

James K. Finch, long a national figure in engineering education, is retiring as dean of the school of engineering at Columbia University, to be succeeded by John R. Dunning, professor of physics and scientific director of the university's new cyclotron at Irvington-on-Hudson, N. Y., who is a pioneer in atomic research.

Dean Finch, who retires in accordance with Columbia's recently adopted rule that 65 is the age limit for administrative officers, will resume the chair as Renwick professor of civil engineering, the post he formerly held. He was graduated at Columbia in 1906 and has been a member of the engineering school staff since 1911.

Under Dean Finch's direction in the last year, the school and its alumni have launched a broad development plan, the first phase of which is the prospective acquisition of a new building on Riverside Drive near the campus. This is the first step in the erection of a new Engineering Center, subsequent planning for which is now to be directed by Dr. Dunning.

Jobs for 1950 graduates

It will be easier for 1950 engineering graduates to get jobs this year than was expected, according to the annual college placement survey by the Northwestern National Life Insurance Co., Minneapolis, Minn.

Starting salaries will be as high or higher than last year, survey returns from 47 engineering schools showed.

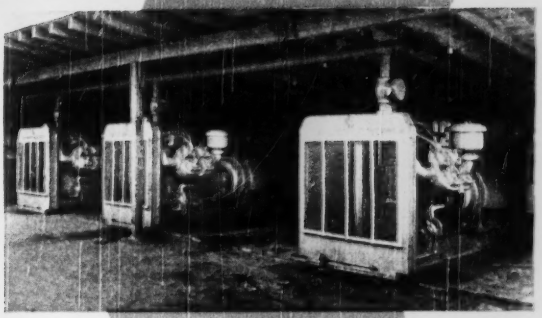
Of the schools surveyed, 21 expected that 80 to 100 percent of this year's graduates will have jobs by autumn, the company reported. Another 10 schools estimated that 75 to 90 percent of their current crop of graduating engineers will be placed by that time.

Employment demand equal to or better than in 1949 was reported by 20 schools. Nine noted that job calls were off slightly from last year. A

(Continued on page 59)

GARDNER-DENVER *Speeds* TUNNEL CONSTRUCTION

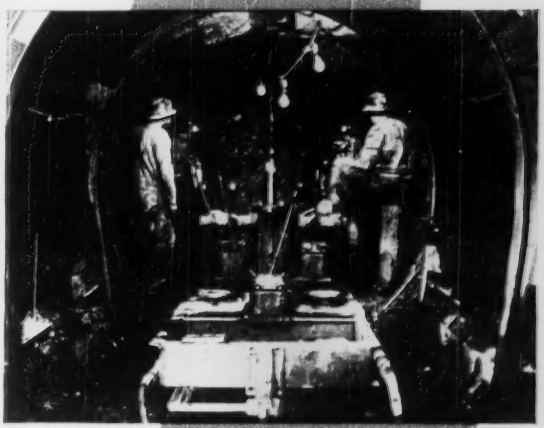
at the portal . . .



700 cubic foot WBJ Two-Stage Compressors are available with electric motor, diesel or gasoline engine drive.

Ready to hook up and go — "packaged" WBJ Compressors require no special foundation — no water piping — no external cooling devices. That's why you get air power "on tap" days ahead of schedule — with a smaller investment in the compressor house. And remember, smooth-running WBJ Compressors — with balanced construction and self-contained cooling system — assure dependable, low-cost air to speed every foot of the bore.

at the face . . .



Complete truck-mounted jumbos are equipped with one, two or three drill booms and a roof jack unit. Separate hydraulic boom and roof jack units are available in various lengths for your custom-built jumbo.

Save drilling time every round — choose versatile Gardner-Denver Hydraulic Drill Jumbos with *"creep-free"* booms. Faster on the setup — faster from hole to hole — faster tearing down. Handle up to 10-foot steel changes — give you low-cost drilling — faster, properly drilled rounds.

For complete information, write Gardner-Denver Company.

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Split Half a Second into Sixteen Parts . . . *and you get a sensational improvement in blasting methods!*

Here's a picture that shows WHY the ROCKMASTER Blasting System pays off! Notice the rock in motion. And yet the explosive gases are held within the burden. No spectacular "spouts" of gas going to waste. Result: Greater explosives efficiency, better fragmentation, less vibration, greater safety.

In a ROCKMASTER blast, holes are electrically fired at controlled split-second intervals. The timing is in each electric blasting cap. The ROCKMASTER "16" series offers you a choice of sixteen millisecond delay detonators, all starting together, all firing at timed intervals in a little over half a second!

For rock, coal, ore—on the surface or underground

Your job may call for two, three or all sixteen ROCKMASTER detonators. We help you select them to fit your job. Drill pattern and explosives are based on what you want to accomplish. Many times, this means important savings in drilling and dynamite.

Write for your copy of the booklet on the ROCKMASTER "16" Blasting System. It includes diagrams for loading in quarrying, stripping, mining, construction.

ROCKMASTER "16" TIMINGS

Rockmaster No	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

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decrease in demand for new graduates of 25 to 50 percent was reported by 18 schools, but this was offset in many of the schools by corresponding declines in the number of graduates.

Boston reports favorable—About half of this year's engineering school graduates in the Boston, Mass., area are assured of jobs, according to figures recently released by the institutions. The remaining 50 percent will have found jobs by October or November, it is claimed.

"The situation may not look bright when contrasted with the years immediately following the war when industry was desperate for engineers and would hire them sight unseen," said Nathaniel M. Sage, director of the division of industrial cooperation and placement officer at Massachusetts Institute of Technology. "But when you compare this year with the late 30's, you will find that, as of this date, we are better off than in any year except 1939."

In Boston the finding is that any qualified engineering graduate who is really serious about going out and getting a job, will be placed.

On May 22, at M.I.T. there had been placed 47 percent of the bachelors; 56 percent of the masters, 100 percent with professional degrees, and 65 percent of those with doctors' degrees. In addition, several students had received offers and were trying to make up their minds. The entire graduating group numbered 1286.

Two-thirds of Cornell University's 1950 engineer graduates are already employed.

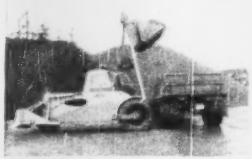
Educational Notes

Engineering council—An engineering council to coordinate activities of student chapters of four of the engineering societies—the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Chemical Engineers, and the American Institute of Electrical Engineers—has been formed at the University of Delaware, Newark, Del. The council will foster one joint professional meeting each semester, an annual engineers' ball, an open house, and a student technical publication.

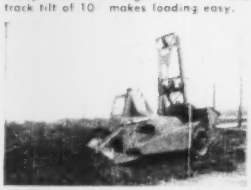
Civil engineering at Laval—Creation of a complete school of civil engineering, to start next fall, has been announced at Laval University, Quebec.

Prof. Frank M. Ellis has been named acting dean of the William Rayen School of Engineering of Youngstown, Ohio, College, succeeding the late Dean Louis A. Deesz.

Additional height of track as shown here makes the Duo-Way a versatile profit-maker.



Scoop lifts to a height of 14 ft. and track tilt of 10° makes loading easy.



Big 84-inch dozer blade with 8000 lbs. down pressure levels land on this job. Scoop at other end can be filled for ballast.

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Power-packed, all hydraulic controlled, the Wagnermobile Duo-Way Scoop cuts operating costs. Saves in both labor and equipment. Four big operations in one . . . loader, dozer, truck and tractor.

Big 84-inch dozer blade dozes out a bank . . . 1 cubic yard scoop at the other end scoops up dirt, lifts it and loads it. All by one machine — Wagnermobile Duo-Way Scoop.

Wagnermobile Special Features:

- Driver in side saddle position has all around vision . . . perfect control.
- Planetary drive . . . rugged "extra" power.
- Improved hydraulic controlled track and dozer.
- Special tilt control track tilts 10° back, 10° forward.
- Top section folds down to 9 ft. 6 in. for low road clearance.
- Highway speeds up to 20 mph.
- 4 speeds forward, 4 speeds reverse.
- Complete assortment of attachments for versatility.
- Wagnermobile Duo-Way Scoop is designed for top performance. Job tested for more profit on every job.

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MEN AND JOBS

Charles R. Foster has been appointed chief of the flexible pavement branch, Soils Division, Waterways Experiment Station, Corps of Engineers, Vicksburg, Miss., succeeding **W. K. Boyd** who recently went to Juneau, Alaska, with the Bureau of Public Roads. Mr. Foster has been with the Corps of Engineers since 1936, when he was employed in the soils laboratory of the Memphis District. He transferred to the Little Rock District in 1937 and to the Waterways Experiment Station in 1945. Since 1946, he has been assistant chief of the Flexible Pavement Branch. He served as a Corps of Engineers specialist in Germany during the enlargement of Berlin airfields at the time of the "Air Lift".

P. R. Sandwell, consulting engineer, has announced the formation of Sandwell and Company, Limited, with offices at 750 Granville Street, in Vancouver, B. C. The company will serve as engineering consultants for industrial undertakings, especially pulp and paper plants.

Troy Carmichael, engineer-director of the N. J. Bituminous Concrete Association for the last two years, has been named engineer of the Montana State Highway Department. He is a civil engineer graduate of the University of Washington, 1919.

Mrs. Doris Sullivan of La Jolla, Calif., long a municipal consultant, has been appointed city manager of National City, Calif. She is believed to be the only woman city manager. She has outlined a program of tidelands development to create industrial land along San Diego Bay, and annexation of unincorporated areas adjacent to the city. She was graduated from the University of California, and has done graduate work in public administration.

The Southern California Metropolitan Water District has announced the appointment of Robert B. Diemer, left, as assistant general manager and chief engineer, and Robert M. Peabody, right, to succeed retiring chief electrical engineer James M. Gaylor, center. Diemer was promoted from chief operation and maintenance engineer of the Colorado River Aqueduct system. He will have charge of five pumping plants and the 237-mi transmission system supplying power for the pumps from Hoover Dam.

Environmental sanitation activities of the Florida State Board of Health are directed by David B. Lee, chief sanitary engineer. Harvard-trained men—John Miller (l) and John Wakefield—head up the water and sewage sections.

George T. McClean, Astoria, Ore., city engineer, is retiring after 20 years. He plans to engage in private practice as a consulting engineer at Astoria and Portland. For many years he has been engineer for the port of Astoria.

D. D. Godfrey, Revelstoke, B. C., has been named provincial public works engineer for the Prince George district. He went to Revelstoke from Buenos Aires.

Charles Hawkins, city and county planning director of Nashville, Tenn., has been appointed by the Nashville Housing Authority to be redevelopment director of the multi-million dollar Capitol Hill project in that city. A graduate of the school of engineering, Vanderbilt University, Nashville, he has been director of both city and county planning commissions for the last decade. During his leave of absence from his regular post to direct the Capitol Hill project, **W. A. Pitts**, county planning engineer, will take his place.

Loyd C. Huffman, superintendent of the Dayton, Ohio, sewage treatment division since 1946, will succeed **W. W. Morehouse** as director of the Dayton city water works division. Huffman has been in the employ of the city since 1928, and served as acting superintendent of the city sewage treatment division for several years. Morehouse retired recently after directing the water division for 23 years.

John L. Savage, famous Reclamation engineer, who has designed some of the largest dams and multiple-use water conservation projects all around the globe, has been nominated by Commissioner Michael W. Straus for a place of honor in Reclamation's Hall of Fame.

Lionel Hunter, Assistant Commissioner of Works, Ottawa, Ont., has been named by Board of Control to be acting Commissioner of Works.

J. H. Irvine, designing engineering assistant in the Works Department, Ottawa, Ont., is to be acting assistant Commissioner of Works.

(Continued on page 62)

Best-Telling Book

CONTENTS:

WHAT LUBRICANTS FOR WHAT APPLICATIONS —AND WHY

YOUR TYPE of construction equipment—engines included—is plainly, soundly covered in this book. You'll be able to judge for yourself which types of lubricant best suit various machines and conditions. You can make your own point-by-point check-up on the complete line of Cities Service lubricants—engineered in types and grades sure to be more than a match for fierce loads, weather and terrain. The performance records prove how sharply maintenance costs go down . . . how steadily grueling schedules are met . . . with Cities Service lubricants on the job. Call the nearest Cities Service office for competent aid, or write us direct.

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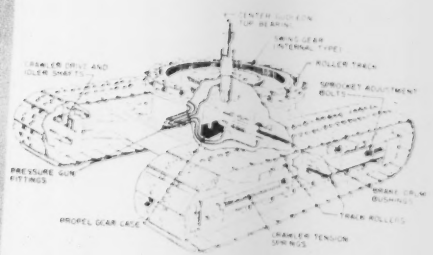
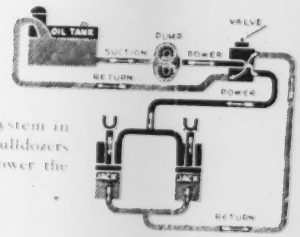
Multi-Purpose
GEAR OILS
HEAVY DUTY MOTOR OILS



"FIG. 23

Shows internal type open gears of swing rack and one method of lubricating trunnion and other shaft bearings . . . The propel gears are enclosed and oil lubricated. The crawler track and other parts lubricated through pressure gun fittings require grease. See lubrication chart for proper type and grade . . .



"FIG. 33

Hydraulic system in use on some bulldozers to raise or lower the blade."

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Kinnear Rolling Doors. The famous interlocking steel-slat doors—*originated by Kinnear*—glide smoothly, easily upward, coiling out of the way overhead. They save floor and wall space. All-metal construction assures extra years of low cost service, protection against fire, storm, intrusion, and accidental damage. Available with Kinnear motor operators and push-button control.

Kinnear Rolling Fire Doors. The famous "Ak-bar" Fire Door, similar to doors above, but featuring automatic closure in case of fire, with safety for building occupants.

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Kinnear Rolling Grilles. Sturdy upward-coiling curtain of interlocking steel bars and links that protect property without blocking light, vision, or sound. Any size.

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ROLLING DOORS

Rear Admiral Wm. M. Angas (CEC) U.S.N., director of the Atlantic division, Bureau of Yards and Docks, has retired after a Navy career of 32 years, and has become chairman of the civil engineering department of Princeton University. A graduate of M. I. T., 1917, Admiral Angas is known to thousands of Seabees as the Officer in Charge, Third Naval Construction Brigade and Head of the 7th Fleet Construction Forces who supervised the construction of many bases in the Pacific, and the 7th Fleet headquarters in Manila the Philippines.

N. A. Staples was recently made assistant chief engineer in charge of maintenance in the Pennsylvania Department of Highways. He studied engineering at Pennsylvania State College, served as a lieutenant with the 7th U. S. Engineers in France during the first world war, and joined the department in 1919. He has had experience in all branches of highway construction and maintenance in many parts of the state. Latterly he has been district engineer at Harrisburg.

The Egleston Medal, awarded annually by the alumni association of Columbia University's School of Engineering for distinguished service in engineering, was presented this year to **Edmund A. Prentis**, of the New York firm of Spencer, White and Prentis. He was graduated from the school in 1906, and has been active in many underground construction projects, including subway construction in New York City. He has been responsible for improvements in the techniques of hydraulic jacking as well as for new applications of scientific principles to the solution of other practical problems.

Fred G. Schlemmer, manager of operations of the Hanford plutonium production center at Richland, Wash., for the U. S. Atomic Energy Commission, has resigned to enter the construction industry, in New York. A civil engineer, he was with TVA for 13 years until 1946, became a consultant to AEC in 1947, and a year later went to Hanford as manager.

Herbert M. Bates, an employee of the Tennessee Department of Highways & Public Works since October, 1919, has been appointed division engineer at Nashville. He succeeds the late Robert J. Love. Bates attended the Columbia Military Academy. He has been continuously employed by the state highway department for more than 30 years and since July, 1935, has served as division maintenance engineer with headquarters in Nashville.

The North Carolina State Highway Commission has made these changes in personnel: **Berrien W. Davis**, state maintenance engineer, will replace **S. C. Austin** as state equipment engineer. Mr. Austin resigned to become assistant executive secretary of the Carolina branch of AGC. **Zeb V. Stewart**, division engineer at Asheville, will succeed **John C. Walker**, division engineer at Wilkesboro. Mr. Walker resigned to become city engineer of Asheville. **W. M. Corkill**, assistant division engineer at Asheville succeeds Mr. Stewart, and **J. T. Knight** succeeds Mr. Corkill.

Levi Wilson has been named city engineer at Peru, Ind., succeeding the late John C. Horan.

Neil W. Bond is with Henkels O. McCoy, Philadelphia contractors, as projects manager. He had been resident engineer for the Corps of Engineers, Baltimore district, having served on the Wilkes-Barre, Pa., Veterans Administration Hospital project since March, 1948.

This 2½ cu. yd. Sauerman Power Scraper cuts deeply into hill of gravel and moves about 85 cu. yds. of material an hour to crusher. The scraper tail-block is attached to a movable bridle frame located on the brow of the hill.

☆

Great Flexibility

Sauerman machine can reach across a stream, pond, pit or stockpile or to top of hill and move material rapidly from any point within its cable radius. The radius can be extended as far as 1,000 ft or more.

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With a Sauerman Power Scraper you can simplify many excavating and stockpiling jobs that require moving materials short distances. A Sauerman machine digs a heaping load, hauls this load to any desired point within its operating radius, dumps automatically, then returns at high speed to dig another load.

Operation and Upkeep Are Simple . . .

The operator of a Sauerman Scraper has control of everything at his finger-tips. Any workman is easily trained for the job. Power consumption is small. Installation and upkeep costs are surprisingly low.

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When men work underground, in close confines, or where there are fumes from welding, painting, or dust from chipping plaster, handling cement or similar unpleasant jobs, you get penalized on production from too many "times out".

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ELECTIONS AND ACTIVITIES

Daniel F. McGillicuddy of Roxbury, has been appointed executive secretary of the Massachusetts State Planning Board. The board is chiefly an advisory agency, but city and town planning boards and zoning boards refer to the state board for information on procedures.

Brig. Gen. Henry C. Wolfe, USA (retired), Washington, D. C., engineer of the U. S. Corps of Engineers was recently elected national beachmaster (commander) of the Amphibian Engineers' Association. Other officers: V. G. Stoughton, national secretary, and Maj. Gen. Daniel Noce, chief of staff, Army European Command, honorary beachmaster.

James D. Hetterman elected president of the newly organized Onondaga County Chapter of the New York Good Roads Association. William H. Kearney, vice president, and E. Gwyn Thomas, secretary-treasurer.

Officers of the Alabama Chapter, American Public Works Association are: Morris Ford, president; O. L. Skinner, vice president; and J. N. Dunn, secretary-treasurer.

H. P. Sedwick has been elected president of the Western Society of Engineers, Chicago. Other officers: Donald N. Becker, first vice president; Ovid W. Eshbach, second vice president; John F. Sullivan Jr., treasurer. Trustees: F. E. Grunter and A. W. Howson.

Carey H. Brown, general superintendent of engineering and services at Kodak Park, Rochester, N. Y., has been elected president of the Rochester Engineering Society. He succeeds Stanley C. Stacey, who becomes a director for three years. Other officers are: First vice president, Allan H. Candee; second vice president, Howard A. Brown; treasurer, Norman H. Davidson, and directors for three years, Howard Harding and Ray H. Manson. Directors held over are: Harvey J. Kimub, F. Blakeney Gleason, John W. Morrison, J. Howard Cather, Earl C. Karker and Alexander Russell.

Dexter D. Coffin, Windsor Locks, Conn., has been elected president of the New England Interstate Water Pollution Control Commission. Officials of the control commissions of New York, New Jersey, Connecticut, Massachusetts and Rhode Island are considering steps necessary to accelerate the attack on pollution in coastal and interstate waters. Surveys of the situation have been made and studies were made also at Rhode Island State College, Kingston and Wesleyan University in Middletown, Conn. One of the surveys took up the problem of water pollution in the New England and New York textile industry.

The civil engineers of the faculty and alumni of Rensselaer Polytechnic Institute, Troy, N. Y., joined with other engineers in that district to honor Prof. Warren C. Taylor of Union College at a testimonial dinner recently at a meeting of the Mohawk Section, American Society of Civil Engineers. Professor Taylor, head of the civil engineering department of Union College retires this summer after 40 years of service, and almost 50 years of engineering practice since his graduation from Massachusetts Institute of Technology with the class of 1902, 48 years ago.

MAJOR MEETINGS

American Society of Civil Engineers, annual convention, Royal York Hotel, Toronto, Ont., June 12-14.

Photogrammetry Seminar, University of Denver, Denver, Colo., Aug. 7-12.

Maine Water Utilities Association, summer meeting, Mt. Desert Island, Me., Aug. 9.

ASCE, North Carolina section, joint meeting with N. C. Society of Engineers, Wrightsville Beach, N. C., Aug. 18-19.

Pennsylvania Water Works Operators' Association, annual conference, Nittany Lion Inn, State College, Pa., Aug. 21-22.

Pennsylvania Sewage & Industrial Wastes Association, Nittany Lion Inn, State College, Pa., Aug. 23-25.

N. Y. section AWWA, fall meeting, Saratoga Inn, Saratoga Lake, N. Y., Sept. 7-8.

W. Va. section AWWA, annual meeting, Pritchard Hotel, Huntington, W. Va., Sept. 13-14.

American Railway Bridge and Building Association, annual meeting, Hotel Stevens, Chicago, Ill., Sept. 18-20.

New England Water Works Association, Poland Springs, Me., Sept. 18-21.

N. Y. Metropolitan section, Institute of Traffic Engineers, annual meeting, Commodore Hotel, N. Y. City, Sept. 24-27.

American Institute of Park Executives, annual convention, Baker Hotel, Dallas, Tex., Sept. 25-28.

Pennsylvania Water Works Association, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., Sept. 27-29.

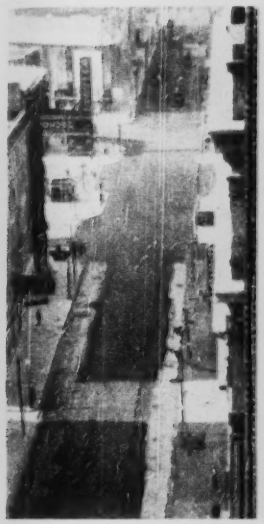
Rocky Mountain Sewage Works Association, La Fonda Hotel, Santa Fe, N. M., Sept. 27-29.

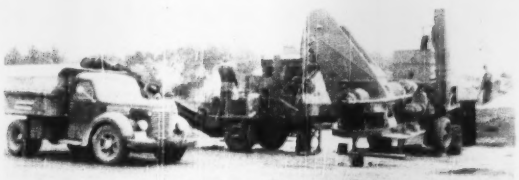
Barber-Greene Photo-News

ON-THE-JOB VIEWS AND COST-SAVING IDEAS VOLUME 1—NUMBER 2

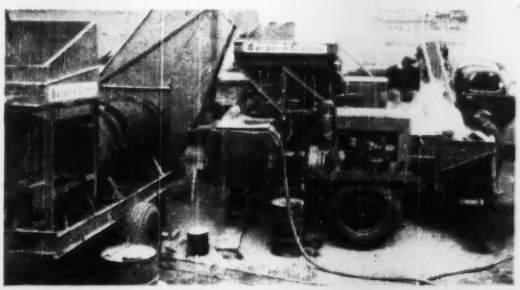
OPERATION ASPHALT SETS PAVING RECORD

Baltimore broke all existing street paving records when 14 blocks of arterial streets were paved in one day. Such speed was necessary if costly interruptions and tie-up time were to be held to a minimum. Ten Barber-Greene Finishers placed the required 23,500 sq. yds. of 2 and 3 course hot-mix in 13½ hours . . . to everyone's complete satisfaction. Contractors (7 cooperated), city officials and engineers . . . even the "sidewalk superintendents" . . . agreed that "Operation Asphalt" was a huge success.





Complete Maintenance Plant in Portable Package



PAVING PACE FAST IN VERMONT, TOO

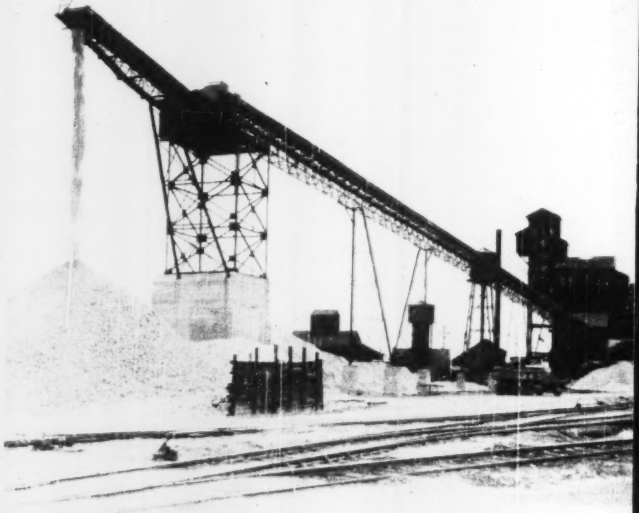
Up here in the northern reaches of the U. S., the Highway Department of Vermont sees to it that this B-G Portable Maintenance Plant really gets around. Ten moves were made in each of the last two seasons. The plant processed as much as 35,000 tons of cold-mix before January snow forced a shutdown. Each of these moves was completed in less than three days, including an average of 75 miles of road travel between set-ups. This quick, economical portability is a big cost-cutting advantage. It enables the state of Vermont to profitably handle a large amount of its own maintenance work on a year-round basis.

Close-up from Dryer end. Note set-up in yard.

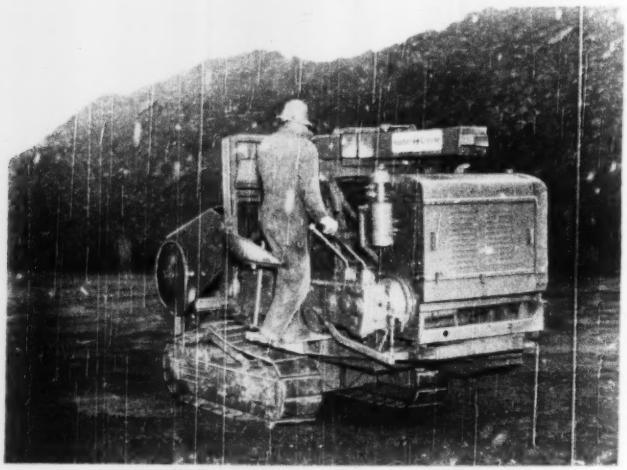
Barber-Greene *Photo-News*

CONVEYOR SYSTEM DOUBLES in DOLOMITE

A unique system for handling two different types of products has been built around this B-G Permanent Conveyor by Consumers Co. of McCook, Illinois. Here you see it carrying limestone from the crusher to discharge from a height of 56' onto a surge pile. Capacity is 600 tons per hour. Tunnel conveyor beneath surge pile carries stone under tracks to dolomite plant. When the second product — limestone for railroad ballast, road and construction work — is being processed, a B-G Tripper spills material from the conveyor into a bucket elevator. The limestone is then carried into the main processing plant. Here is another example of how the effective use of simple, standardized B-G Conveyors minimizes the expense and manpower of high capacity moving of bulk materials. Note how small, under-hung conveyor discharges to clear the supports.



SAVINGS MARKED OFF BY THE ACRE The Hanna Coal Company is now saving an estimated 200 to 400 tons of coal per acre at their Number 12 Mine in Georgetown, Ohio. This is coal that was previously left in the mine, buried under the spoil from previous cuts. But now with the help of this B-G machine, the shovel operator is loading out nearly 100%. The B-G Ditcher, in this operation called a "marking machine," cuts a 5' wide trench to the full depth of the seam, marking a "go-no-farther" line for the shovel, and leaving a vertical wall in place of a saw-tooth edge which formerly trapped coal under spoil. This is another example of sound B-G engineering solving unusual problems economically, simply, with minimum manpower.



BAY CITY BEAUTIFIER

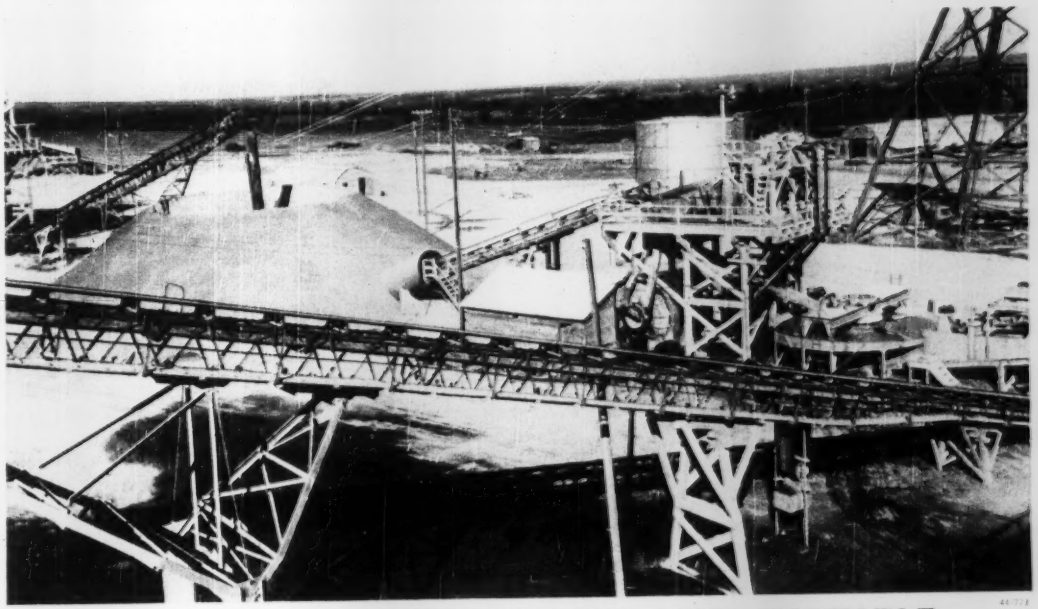
San Francisco has long been noted for its beautiful parks and beaches. Now, to insure that those parks and long stretches of white sand remain the envy of the world, a B-G Crawler-Mounted Bucket Loader performs a multitude of services for the Park Commission. They use it to clear away drifted sand in the dividing strip of seaside multi-laned highways, stripping loam for use in maintaining or establishing new grass areas, as a loader of debris, sand, etc., as an excavator for cutting new park paths. The beaches get their beauty treatment at frequent intervals when the B-G Loader patrols the bathing strip, removing glass, stones, paper . . . even an occasional watch or ring.

for full, fast information on any equipment

Barber-Greene *Photo-News*

BELT CONVEYORS AND "COMPATIBILITY"

Skillful use of belt conveyors is simplifying the job of handling aggregate for the $20,000,000 flood control project now being constructed by the Mount Morris Dam builders. Featuring the latest in push-button control, the aggregate plant is geared to produce 5 grades of aggregate from the same stone (for aggregate compatibility) at the rate of 4500 tons per day. This impressive production achievement is made possible largely through the use of 17 belt conveyors that handle all stone and aggregate from raw storage to concrete plant. Typical of the jobs B-G standardized, easy-to-install conveyors are doing, is the first stock pile belt, a 36" x 198' unit with a capacity of 500 tons per hour. The many B-G pre-engineered conveyors in this system are contributing greatly to the efficient, economical handling of aggregate for the 900,000 cu. yds. of concrete required.

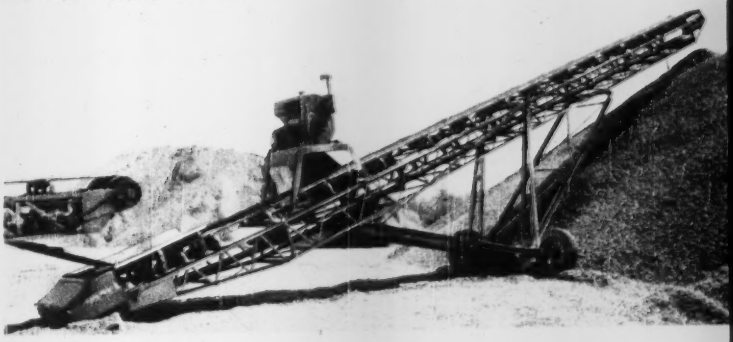


BIG, RUGGED — AND PORTABLE

In quarries or gravel pits, in the yards of State, County, and Municipal Highway Departments, railroads, mines, mills, in any industry — any place where heavy duty portable conveying service is a "must" — this new B-G Portable Conveyor is right at home. In spite of rugged construction for toughest operation, this conveyor is highly portable. It is equipped with a low mast truck which speeds movement in and around buildings, guards against damage from underpasses while towing. It is THE heavy-duty portable. Send for your copy of new literature.

FOR A TRIM LOAD EVERY TIME

Hydraulically controlled conveyor on this new B-G Loader swivels to trim every load . . . eliminates spillage or partly filled trucks. This flexibility, plus long reach, allows filling largest, highest trucks, trailers — even railroad cars — to full capacity at a 3 yd. per minute clip. Newest in the B-G line, this Loader travels at 15 M.P.H. on its pneumatic-tired chassis. Easily converted to a 7-11 yd. per minute snow loader to give year-round service. New literature — now on the press — illustrates the many features of this newest B-G Heavy-duty Loader.



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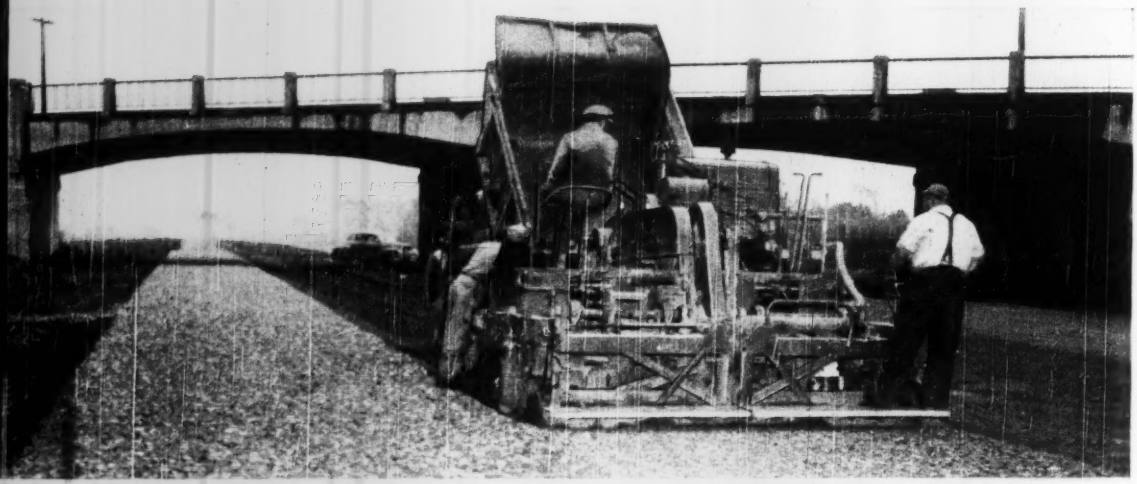
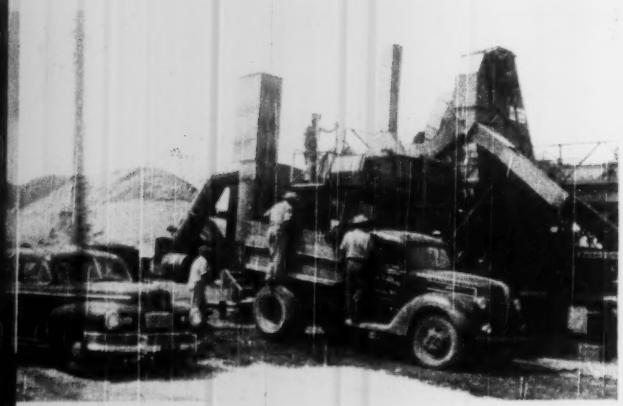


CRUSHED STONE MANTEL FOR THE QUEEN'S WAY



Two B-G Finishers recently completed laying 110,000 tons of stone along the Queen Elizabeth Way between Fort Erie and Niagara Falls, a distance of 18 miles. Often working in tandem, these two green machines spread two courses of raw stone for this penetration macadam in sizes up to 3½". In spite of this tough abrasive material, both Finishers went through the entire job without an hour's delay . . . completing it in only 1,000 working hours. The final surface is a smooth, durable highway . . . the pride of the province. In the words of the engineers ". . . it cannot be beat."

MAKING WAY WHILE THE SUN SHINES

In spite of freakish storms and weather extremes, the C. H. Atkinson Co. was able to make way while weather permitted and pave 7.8 miles of U. S. 36 out of Chillicothe, Mo., last season in near-normal time. Chief contributor to this performance was a B-G Utility Mixing Plant and Dryer that turned out top quality mix at a 60 ton per hour rate. Of particular advantage was the Utility Dryer which solved the moisture control problem and assured mixes of a quality that would have been otherwise unobtainable due to the heavy rainfall. A B-G Finisher placed two 3" courses of type B hot-mixed asphaltic concrete over the 20-year-old concrete slab. This was a quick transformation of a rutted, broken roadway with a minimum of interference to normal traffic.

A 34-YEAR INVESTMENT IN YOUR BUSINESS

Behind every machine in the broad Barber-Greene line stands a 34-year investment in experience, engineering and material handling techniques. This investment can save you money whenever and wherever your problems involve the handling of bulk materials . . . mixing and placing bituminous surfacing materials . . . as well as ditching and snow removal. Use this investment. Call on your factory-trained, job-experienced Barber-Greene Distributor. Ask him to help you get the most in cost-cutting operation by eliminating the use of expensive equipment and manpower. Further, your Barber-Greene Distributor has service and repair part facilities you can depend upon through the years. For complete information — bulletins, specifications and prices on any or all Barber-Greene equipment — get in touch with your B-G Distributor or call, write or wire directly to the address below.

Barber-Greene Company

AURORA, ILLINOIS, U. S. A.

OBITUARY

Prof. Frederick William Greve, 64, hydraulic engineer and member of the civil engineering staff of Purdue University, Lafayette, Ind., since 1911, died June 14. He was an inventor of several instruments and improvements in his field and engaged in basic research in the hydraulics field.

Christopher C. Baumgartner, 75, retired inspector for the Corps of Engineers and formerly inspector for Los Angeles city engineers, died in Los Angeles June 11. He had been active in the construction of 90 percent of southern California dam projects since 1910.

John M. Balk, 71, vice-president of the Construction Aggregates Corp., sand and gravel dealers, died in Oak Park, Ill. June 12. He had been in that business since 1908.

Edward E. Jenkins, 67, civil engineer and a champion tennis player, died in New York City, June 17. He received an engineering degree from The Citadel, Charleston, S. C. During the first world war, he was West Coast manager of the Foundation Co. and had been supervisor of the firm's shipyards in Victoria, B. C., Portland, Ore., and Seattle, Wash. In later years he was N. Y. district manager of the Medusa Portland Cement Co. and general manager of the Griffin Wellpoint Corp.

Charles A. Brown, 84, former assistant city engineer at Indianapolis, Ind., died June 12. He retired in 1925. He was a graduate of Butler University, Indianapolis.

Myron T. Jones, 52, Columbus, Ohio, consulting civil engineer, and past president of the Franklin County chapter of the Ohio Society of Professional Engineers, died June 11.

Robert G. Brown, 55, road superintendent for the Summit County, Ohio, engineering department in the southern part of the county, died June 12 at Portage Lakes. He had been with the county engineering department for 18 years.

William B. Poland, 83, civil engineer and chief consultant to the Board of Economic Warfare in the war, died at Washington, D. C. June 27. He was a graduate of M.I.T. In 1925 he organized the railway system in Persia.

S. S. Jacobs, 63, construction engineer

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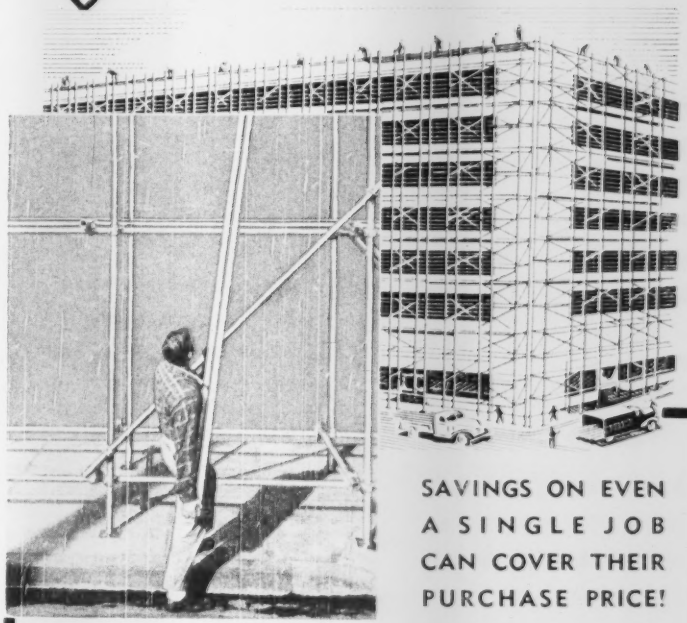
NEW **UP-RIGHT Aluminum Alloy "Tube-and-Coupler" SCAFFOLDS**



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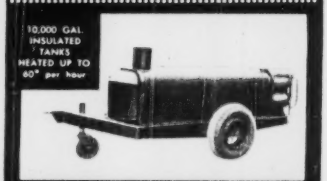

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and active in civic affairs of Jacksonville, Fla., died June 12 in Boston, Mass. He was president of S. S. Jacobs Co., a construction firm. He was graduated from Washington University, St. Louis, Mo., in 1909 as a civil engineer. He constructed the Tallahassee Army Air Base, MacDill Field at Tampa, and the dirigible base at Richmond, Fla.

Charles J. Sullivan, 60, a civil engineer with the New York State Department of Public Works for more than 30 years, died June 7 in West Sand Lake, N. Y. He was graduated from R.P.I. in 1913.

Burgess Manchester, 57, civil engineer, died in Omaha, Neb., May 25. He had served 30 years with the Metropolitan Utilities District.

Raymond M. Whorley, 47, of Bernardsville, N. J., died June 7. He was a civil engineer graduate of the Pennsylvania Military College, 1923. Since 1945 he had been a civil engineer with Leslie M. Apgar, Far Hills, N. J.

George E. Willard, 60, an engineer, died June 7, at Doylestown, Pa. During his tenure as a member of the Doylestown Borough Council he supervised construction of the community's municipal water plant.

George J. Rathbun, Sr., 79, president and treasurer of the Rathbun-Jones Engineering Co., Toledo, Ohio, died June 19. He was graduated from Cornell University in 1895. He was one of the founders of his company.

Edgar Brearley, 62, chief engineer of the sewage section of the department of works, Toronto, Ont., with which he had been associated for more than 24 years, died June 15.

LeRoy M. Bartless, 57, construction engineer with the Corps of Engineers, died at Portland, Ore., June 12. At the time of his death he was engaged in work on Lookout Point Dam, a unit of the Willamette Basin flood control project.

DeWitt Rapalje, 69, retired consulting civil engineer, who had lived in Plainfield, N. J., for 59 years, died at Maplewood, N. J., June 23. He was a civil engineering graduate from Rutgers University in 1900, and for many years was chief fire prevention engineer of the Railroad Insurance Association, New York, and was active in the fire protection and insurance section of the Association of American Railroads. In recent years he served as engineer for the Emergency Housing Committee of Plainfield.

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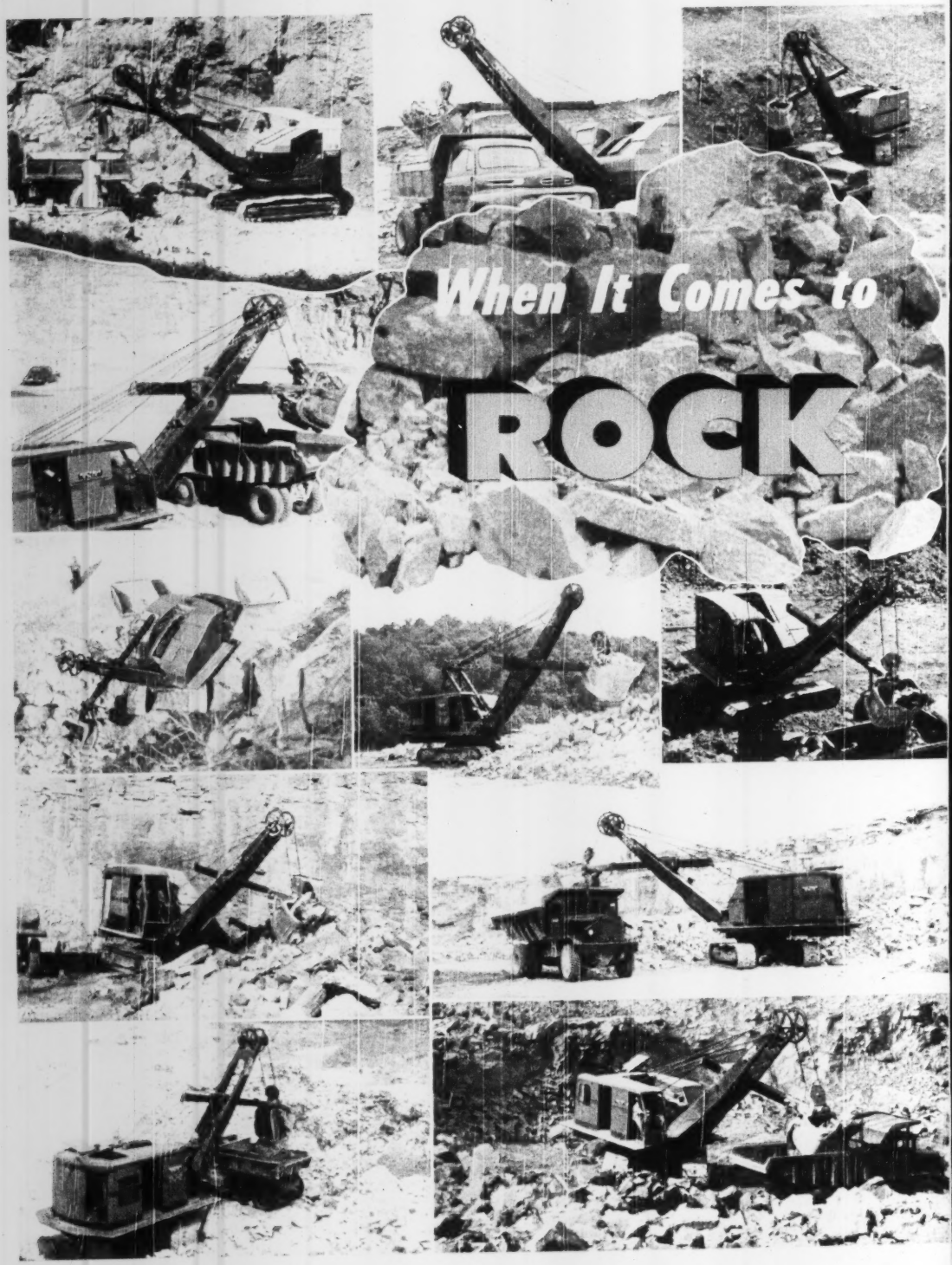
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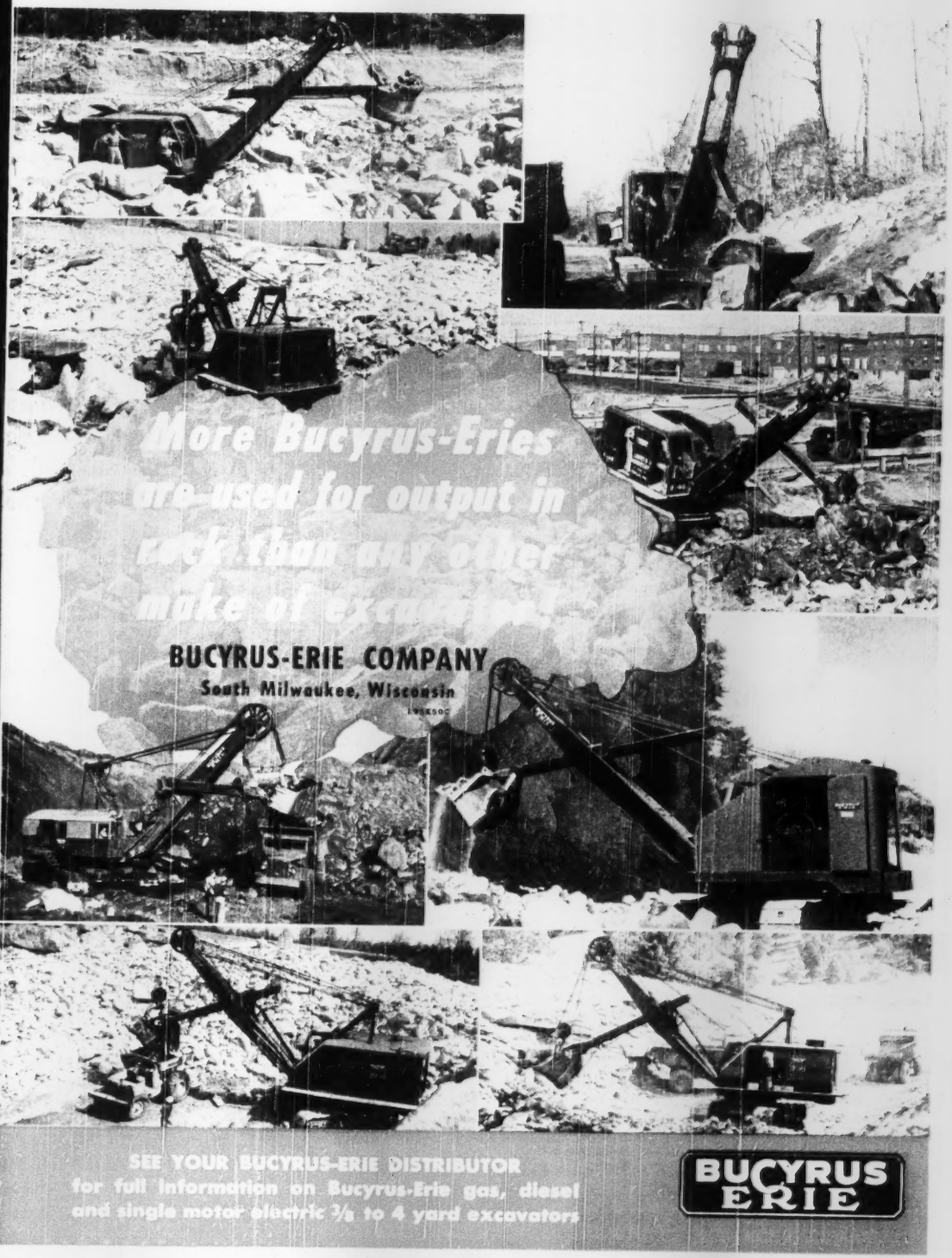
ROCK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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

† Wash., Arlington—U. S. 7/19—P. Wks. Officer, 13 Naval Dist., 2611 W. Wheeler St., Seattle, water supply sys., transmitter area, U. S. Naval Communication Station, Jim Creek, Sonc. 24982. Plans deposit $10.

LOW BIDDERS

† D. C., Wash.—U. S. Eng., First and Douglas Sts., N.W., June 22, constr. sedimentation Basin 2 at Georgetown Reservoir on Mac Arthur Blvd., about 1 mi. west of Georgetown, trans. Blackwell Eng. Co., Warrenton, Va., $545,315. CD 5/29.

Md., Baltimore—State Dpt. P. Imprvt., 506 Park Ave., underground utilities for Morgan State College, Sect. 1, and Sects. 1 and 2 combined from Wesley Freeman, Inc., 1700 Friendship st., $29,880, and $41,840 respectively. Sects. 1, 2, and 3, combined from J. H. Lawrence Co., $60,864. Eql. & Tolumgt., Inc., 1019 N. Calvert St., Zone 2, engrs., John G. Funk, Baltimore Zone 1, ch. engr.

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., June 14, c.i. water mains, concrete or vitr. clay sewers, c.i. house connections, Riggs Mill Dist., contr. Tex. from Nickles Bros., 4707 Baltimore Ave., $46,055. c.i. water mains, concrete or vitr. clay sewers and house connections, Berwyn Dist., Contr. 7/1, from Al. Bros., 7736 Fred. Rd., W. Lanham Hills, P. O. Hyattsville, $28,725.

Mo., St. Louis—City, Frank J. McDevitt, pres. Bd. P. Service, City Hall, Zone 3, June 15, cleaning, repairing, lining with cement mortar, approx. 19,850 lin. ft. 60 and 42 in. conduit, between Station plan 50 and Station Plan Reservoir, St. Louis Co., from contributive comp., 143 Cedar St., New York, $96,958. CD 6/27. $91,750 CD 6/20.

N. C., Oxford—City, June 13, water and sewer improv., from C. M. Allen & Co., Investment Bldg., Charlotte, $95,331. Wm. T. Freeman Engineers, Inc., High Point, engr.

S. C., Fingerville—Franklin Process Spinning Mill, Fingerville, June 14, water and sewer imprvs., from G. E. Moore Co., Greenwood, $63,086. CD 6/12.

Tex., Carrizo Springs—City, June 16, water distr. sys., from Frank Butcher Co., 203 Fredericksburg Rd., San Antonio, $42,456. Est. $35,000. CD 5/26.

Tex., North Pleasanton—City, June 16, WW lines, etc., from Wahmund-Logan Co., 402 Hays St., San Antonio, $29,665. Est. $30,000. Frank T. Drought, 117 W. Peden St., San Antonio, engr.

CONTRACTS AWARDED

▲ Ala., Mobile—Mobile Co. dam and spillway for Big Creek Watershed, to Carrel Webster, $1,362,947. Bids 5/10. CD 5/12, under LB.

La., Sunset—Town, water distr. sys., to Campbell Welding Works, Natchez, Miss., $28,118, treatment plant, to Barnet Brofner, Alexandria, $41,360. Bids 6/13.

SEWERS, WASTE DISPOSAL

BIDS ASKED

▲ Que., Montreal—P. A. 7-14—Executive Com., City Hall, tributary sewer, 2 mi., 9 ft. horseshoe concrete walls, extend from Lacette St. along Sauve St. to Papineau Ave., $1,500,000. Plans deposit $50. H. Gilbeau, City Hall, city engr.

LOW BIDDERS

Ill., Chicago—Sanitary Dist. of Chicago, 910 S. Michigan St., Chicago, June 15, Calumet Intercepting Sewer Contr. 11A, from M. Kalmanovitz, 4444 N. Kilpatrick St., $925,060. CD 5/19.

Mass., Boston—Commonwealth Mass., Metropolitan Dist. Comn., 20 Somerset St., June 15, contr. 190, excav. line 14 ft. diam. and 240 ft. deep, Shaft No. 2, and excav. 2,000 ft. tunnel, shaft No. 2 to Shaft 1A, and 1,350 ft. diam. tunnel heading, North Metropolitan Relief Tunnel, & North Metropolitan Sewerage Dist., Chelsea, trunk sewer, Contr. 1, Neville Island, Pittsburg, Pa., $297,248. CD 5/25.

La., Alexandria—City, June 14, Storm Drainage Proj. 4, from Kirland Constr. Co., P. O. Box 850, $166,969. CD 6/2, under earthwork, etc.

La., Morror—Town, June 13, sanitary sewerage sys. addns., alterations, from Lyle Hagerty, 2026 Jackson Ave., Hemmer, $426,223. CD 6/7.

▲ N. J., Linden—Linden Roselle Sewerage Auth., Council Chambers, City Hall, Contr. 1, intercepting and outfall sewers, from Scientific Constr., 417 Riverside Ave., and Nello Dirty Co., Inc., 872 Broadway, both Newark, $824,170***Contr. 2, plant outlet conduit and sludge force main, from Cestone Brothers, 1403 Broad St., Hillside, $370,716***. Contr. 3, sewage treatment plant, general construction, from Andrew Development & Const., 225 W. Grand St., Elizabeth, $1,135,935***Contr. 4, sewage treatment plant, building superstructure, from Calabro Constr. Co., Inc., 592 4 Ave., Elizabeth, $192,170***Contr. 10, electrical work, sewage treatment plant, from Standard Electric Motor Repair Co., 1600 Edgar Rd., E., $109,353. CD 4/28.

Tex., Carrizo Springs—City, June 16, sewage collection improv., from Frank Butcher Co., 203 Fredericksburg Rd., San Antonio, $53,535. Est. $50,000. CD 5/26.

Tex., Odessa—City, June 20, storm sewers from Dill Curphy Co., 447 Insurance Exchange Bldg., Des Moines, Ia., $176,947. Est. $125,000.

Va., Narrows—Town, June 20, sewer lines, from Castle Constr. Co., Grottoes, $171,894. CD 6/2.

CONTRACTS AWARDED

N. C., Longview—Town, sewerage sys., to Gilbert Eng. Co., Inc., Statesville, $121,049; sewage plant, to Elliott Building Co., Inc., Hickory, $59,775. Bids 6/13. CD 6/2.

BRIDGES

BIDS ASKED

New Jersey—B.A. 7/11—New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Union Co.—Contr. 32, substructure of 4 bridges, other incidental work between relocated Bayway and Elizabeth Interchange, Elizabeth. Plans deposit $5. Ammann & Whitney, 185 Raymond Blvd., Newark, engrs. CD 7/13/49, under Streets and Roads.

New Jersey—B.A. 7/12—New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Mercer and Middlesex Counties—Contr. 41, constr. 4 steel, concrete structures, grading, railroad trackwork and incidental work between Allentown and Raritan River. Plans deposit $50. Dow Corter & Co., 16 Mercier St., Hightstown, engrs. CD 7/13/49, under Streets and Roads.

New Jersey—B.A. 7/13—New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Union Co.—Contr. 39, substructures for Trumbull St. viaduct and Humboldt Ave. bridge, Elizabeth. Plans deposit $50. Ammann & Whitney, 185 Raymond Blvd., Newark, engrs. CD 7/13/49, under Streets and Roads.

New Jersey—B. A. 7/14—New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Middlesex and Union Counties—Contr. 33, constr. 16 bridge structures, reconstr., paving approach roads and grading, drainage interchange area, Woodbridge Twp., Carteret and Linden. Plans deposit $5. Tay, Spofford & Thorndike, 26 Livingston Ave., New Brunswick, engrs. CD 7/13/49, under Streets and Roads.

Tenn., Maryville—B.A. 7/14—Blount Co., c/o county engr., steel truss bridge at Little River. Plans deposit $25. CD 4/26.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $8,000; other public works $50,000; industrial buildings $50,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PREPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

LOW BIDDERS

Florida—State Rd. Dpt., Dixie-Sherman Hotel, Panama City, June 16, constr. fender system at nuisance spans on Rds. 600 and 60, Hillsborough Co. and furnishing, driving, exploratory piling, constr. control towers, Pinellas and Manatee Counties, from Jay Dredging & Constr. Co., Oak Ave. and River Rd., Tampa, $51,847 and $107,825 respectively***repairing one hundred ninety-six 15 ft. bridges on Rd. 70 in Highlands and Okeechobee Counties, from S. F. MacKenzie Co., Fort Pierce $98,370***repairing 90 spans and 90 intermediate type bents on Rds. 600, Hillsborough Co., from Western Waterproofing Co., Synd. Trust Bldg., St. Louis, Mo., $138,079***granite & concrete bridges on Rd. 800 in Palm Beach Co., from Latham Constr. Co., West Palm Beach, $53,987***constr. concrete bridge and hardsurf. pavements Rds. 3 and 518, Brevard Co., from R. H. H. Blackwell, 1800 Olivia St., Jacksonville, $136,792. CD 7/25.

New York—Bureau Contracts & Accounts, Albany, June 21, 3 span 356 ft. plate girder bridge carrying county road over Barge Canal at point just east of present Phoenix bridge, incl. 1.39 mi. bit. conc. pavement and related approaches, at Erie and Niagara Counties, from Cedric W. Webb, Buffalo, $360,630. Est. $440,107. CD 6/7.

Texas—State Hy. Comn., Austin, June 20, 0.253 mi. substructure for Brazos River Bridge on Hy. 1t. 90, Proj. 1044 (3), Brazos Co., from F. W. Reeves & Sons, P. O. Box 972, Austin, Zone 5, $184,852. Est. $170,000. CD 6/2.

CONTRACTS AWARDED

▲ Calif., Los Angeles—Bd. Supervs., Los Angeles Co., 501 Hall of Records, bridges over Los Angeles River, on Rosecrans Ave., C.O. 20760, to R. M. Price Co. & C. B. Penson, 2285 Pinecrest Dr., Altadena, $1,110,000. Bids 6/21. CD 6/16 under LB.

Georgia—State Hy. Dpt., Atlanta, to H. J. Smith, Fitzgerald, bridge and 0.342 mi. paved approaches at Alapaha River on Tifton to Ocilla Rd., Fed. Aid Proj. S-1-(3), Tift and Irwin Counties, $83,895; conc. 1 bridge at Altamaha River on Hazlehurst to Uvalda Rd. S.P. 1390, Fed. Aid Proj. F-0190-(3), Jefferson Davis and Montgomery Counties, $470,000; bridges at Yellow River and South River on Covington to Jackson Rd., Fed. Aid Secondary Proj. S-1573 (1), Newton and Butts Counties, $220,672***Big Virginia Bridge Co., 421 Madison Ave., N.E., Roanoke, Va., structures, steel truss bridge at Altamaha River on Hazlehurst to Uvalda Rd., Fed. Aid Proj. F-0190-(3), Contr. 2, Jeff Davis and Montgomery Counties, $62,350. Grand total $832,945. Bids 6/14. CD 6/7.

▲ Ohio—State Hy. Dpt., Columbus, viaduct superstructure, continuous steel girder, spans 72, 127 and 135 ft., continuous steel deck truss, spans 284, 360 and 288 ft., continuous steel deck girder, two 210 ft. spans, two 36 ft. roadways, 4 median and two 3 ft. sidewalks, bridge No. S-124 over Erie R. R., Summit County, to R. S. Summitville, to Wright Constr. Co., Williamstown, Mich., $1,914,604. Est. $1,872,290. Bids 6/16. CD 6/2.

STREETS AND ROADS

BIDS ASKED

Va., Newport News—B.A. 7/18—City Dist. P. Wks., City Hall, various streets. Plans deposit $10. CD 2/9/49.

Neb., Omaha—B.A. 7/11—Douglas Co., Omaha, surf., Western Ave. from 1 mi. south of Blair, 5.0 mi. N. to Washington St., and Blair St. from city limits $60,000. L. E. Adams, co. engr., CD 2/8.

▲ Florida—State Rd. Dpt., Tampa, June 16, from Cone Bros. Contr. Co., Career Ave. at Cumberland St., Tampa, hard surf., approx. 8 mi., Rd. 643 Manatee Co., $410,630; hard surf. 6.4 mi., State Rd. 50, Sumter and Lake Counties, $387,485; paving 1.00 mi. Road 600 A, Hillsborough Co., $60,326***from H. E. Wolf and Son, St. Augustine, hard surf. 4.6 mi., State Rd. 10, between Duval and Nassau Counties, Jackson Co., $360,699; hard surf. 2.7 mi., State Rd. 45, Lee Co., $325,773***from J. H. Craggs Constr. Co., Ocala, paving 3.2 mi., State Rds. 25 and 200, constr. 2 overpasses, Marion Co., $668,335***from Powell Bros., Inc., Fort Lauderdale, paving Rds. 5 and 811, Dade and Broward Counties, $211,522***from A. D. Cobb Constr. Co., 1102 N. 22 St., Tampa, paving 3.6 mi., State Rd. 5, Volusia Co., $889,734***from Asphalt Paving Inc., Jacksonville, paving 5.1 mi., Rd. 109, Nassau Co., $66,614***from Superior Paving Co., Bradenton, paving 7.4 mi., State Rd. 789, Jefferson Co., $160,773***from Manatee Constr. Co., Lake and resurf. 6.1 mi., State Rd. 44, Citrus and 25, Hernando Co., $61,358***from J. D. Maley Constr. Co., Leesburg, resurf. 5.1 mi., along State Rd. A1A, St. Lucie Co., $64,307***from C. L. Hall Constr. Co., Orange Park, clearing, grading, and grubbing land, drainage structures along line, Rd. 10, Duval Co., $146,426***from Cogburn & Hammett, Chipley, hard surf. 4.5 mi., Rd. 10, Jackson Co., 7.6 mi., Rd. 12, Jackson Co., 4 mi., Rd.

10, Washington Co., 2.0 mi. Rds. 30 and 61, Waxalla Co., $70,784. 6/12.

La., Harvey—Jefferson Parish Police Jury, Gretna, June 20, paving streets, from Martin Constr. Co., 8734 Plum St., New Orleans, $90,223.

Massachusetts—Dpt. P. Wks., Boston, June 13, highway and bridge, Mohawk Trail, Greenfield, from Kelliher Corp., Turner Falls, $437,321. CD 6/5.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, June 20, widn. Q St. from 24 to 26 Sts., in Omaha incl. paving, from Peter Kiewit Sons Co., Omaha Natl. Bank Bldg., $64,164. CD 6/12.

▲New York—Bureau Contracts & Accounts, Albany, June 20, from Adsr & Booth, Watertown, b. conc.-surf. t. and resurf. 5 mi., Route 26 exten. northeastward from intersection with Route 12 D to point approx. 1 mi. southeast of village of Honeyville, incl. 0.95 mi. village of Turin, Lewis Co., $114,222, est. $156,000***from Jess F. Howes, Sidney Center, reconstruct with 28 ft. wide bit. macad., 0.26 mi. Route 178 near Hortonsville, incl. 25 ft. span concrete slab bridge, 60 ft. span I-beam bridge and necessary grading, drainage; reconstruction on new location with 22 ft. wide bit. macad. 0.25 mi. Route 52, exten. southward from its intersection with Route 52 A, incl. 84 ft. span I-beam bridge, etc., Sullivan Co., 2220.843, est. $268,000***from County Asphalt, Inc., 124 Main St., Tarrytown, b. cond. resurf. incl. some widn. 26 mi. 4 sections Route 17 between Delaware-Sullivan Co. line and Monticello, Sullivan Co., $371,-820, est. $460,000.

from Johnson, Drake & Piper, Inc., 86 Trinity Pl., New York, construct elevated sect. of Major Deegan Expressway, 0.36 mi. exten., from point near Bronx Terminal Market northward across the New York Central R.R. tracks to approaches to Macombs Dam bridge, incl. construction steel viaduct structure, 145 ft. span plate girder bridge, paving twin 36 ft. concrete roadways and necessary demolition, grading, drainage, lighting, public utilities, Bronx Co.ft. $4,979,447, est. $6,224,000***from Polnier & McClare Corp., 33 W. 42 St., New York, construct High-bridge Interchange on Cross Bronx Expressway from Amsterdam Ave. eastward for 0.28 mi., incl. 10 span 660 ft. reinf.-con. viaduct, 8 span 400 ft. concrete arch viaduct, two 33 ft. span rigid frame concrete bridges, concrete retaining wall, pedestrian underpass, 0.28 mi. conc. paving, etc., New York Co., $3,163,476, est. $3,260,000***from Mac Asphalt Constr. Corp., 33-15 Lawrence St., Flushing, paving with twin 36 ft. wide concrete arteries separated by a mall, 0.55 mi. of previously graded sect. of Van Wyck Expressway exten. from 37 Ave. to Archer Ave., Queens Boro, Queens Co., $263,160, est. $408,000.

from Zara Contr. Co., Inc., 11 Prospect Ave., Hewlett, construct twin 25 ft. wide concrete arteries 4.76 mi. Southern State Parkway exten. from point near Northern State Parkway southward to Southern State Parkway, incl. grading, drainage, paving 3.64 mi. access roads and construct 4 grade separation structures, Suffolk Co., $1,581,186, est. $1,729,000*** from E. D. Della & Sons Constr. Corp., New Hartford, reconstruct with 22 ft. b. conc. pavement 4.89 mi. Route 162 exten. southeastward from point approx. 1 mi. southeast of its junction with Route 47 to point approx. 3,500 ft. southeast of the hamlet of Rural Grove, etc., Montgomery Co., $563,426, est. $803,000***from Warren Bros. Roads Co., 38 Memorial Dr., Cambridge, Mass., widn. & conc. resurf. 6.38 mi. Route 31 exten. northeastward from point near Stanwell St. in village of Newark to Route 14 in village of Lyons, Wayne Co., $135,296, est. $173,-000.

widn. to 24 ft. and b. conc. resurf. 6.64 mi. Route 57 exten. from village of Liverpool northwestward to Oneida River, Onondaga Co., $149,550, est. $196,-000. Also 2.22 mi. Route 28 reconstruction with 22 ft. minimum width b. conc., one, two mi. in length exten. northeast from Old Forge and the other 2.22 mi. exten. southeastward from Eagle Bay, Herkimer Co., $97,155, est. $123,000***from Hornell Constr. Corp., Hornell, reconstruct with 24 ft. wide b. conc. pavement, 0.93 mi. Route 17 exten. southeastward from intersection with Route 36 south of Portville to point near Cattaraugus-Allegany Co. line, incl. necessary grading, drainage structure 28 ft. span concrete slab bridge, Cattaraugus and Allegany Counties, $179,-977 est. $207,000***from the Kellcam & Shaffer Co., Schenectady, widn. to 22 ft., b. conc. resurf. 3.2 mi. Route 146, exten. southward from Schenectady Co. line to intersection with Route 20, Albany Co., $57,646, est. $94,000***from Louis Mayerson, 36 State St., Albany, widn. to variable width and b. conc. resurf. 3.07 mi. Route 9 B at 2 locations, one exten. from intersection with Route 9 northeastward for 1.2 mi. to Caperville, second exten. from intersection with Route 32B southward through village of Round Point for 1.37 mi. to point 1/4 mi. south of intersection with Route 11, Clinton Co., $88,536, est. $101,000. CD 6/7.

Pennsylvania—State Hy. Dpt., Harrisburg, June 23, surfacing pavement with bit. surf. 18 ft. wide, build-up pavement with crushed stone base and bit. surf. 18 ft. wide and appr. 1 mi. of reconstruction involved Route 6, Sec. 181, T.R. 6, from 0.5 mi. E. of Wattsburg to Erie Co. line, $220,000; T.R. 19, Sec. 5, from Albany Boro. and north and south of said boro. Bradford Co., and T.R. 19 and 409, pavement with crushed aggregate base and surface 22 ft. and variable in width, steel metal plate pipe arch and the exten. reinforced concrete bridge with pavement with plain concrete base and bit. surf. 22 ft. wide and one I-beam bridge with pavement with bit. surf. 22 ft. wide and crushed aggregate base with bit. surf. 22 ft. wide and one I-beam bridge 24 ft. wide, L. R. 2314, Sec. B, 2.14 mi. from point south of intersection with Route 69082 in the village of Bear Lake, Warren Co., from A. B. Rice Co., Meadville, $92,951 and $389,321 respectively.***

(Continued on page 77)

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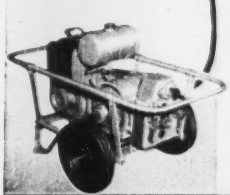

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(Continued from page 75)

10,992 ft. L. R. 26008 (2). L. R. 26010, from point east of Mawhinney Bend to point in the vicinity of Emery, Fayette Co., from Kelley Bros., Inc., 400 Market St., Elizabeth, $217,873. Construct treated aggregate base with bit. surf., 20 ft. and variable in width, incl. one reinforced concrete structure, bit. surf. for paving railroad crossing, 14.156 mi. L. R. 567 (4), T. R. 84, from intersection of Route 22 to point west of Lawrence Jackson Twp. line, Fulton County, from Reiser Construction Co., Box 2104, Fulton, $212,448.

Construct crushed aggregate base with bit. surf. 20 ft. wide and one reinforced concrete bridge, 19.078 mi. L. R. 365 (3), T. R. 470, from point west of the intersection with L. R. 42(64) to the intersection with Route 123, 3.0 mi. N. E., Putman Co., Homerville, $302,000.

Pa., Somerset—General State Auth., 18 and Herr Sts., Harrisburg, June 21, roads and walkways, sanitary and storm sewers at Somerset State Hospital, from Wagner-Smith Equipment Co., 6219 Broad St., Pittsburgh, $458,000 (est. $500,000).

▲ Texas—State Hy. Comm., Austin, June 20, from Dean Word Co., Box 510, Snyder, 3 units base, bit. surf. treatment, flexible base, and surf. (1443) mi. Hy. FM 1117, Proj. C 24-5-17, Kent Co., $215,827, est. $220,000; roadway tr., 2.0 mi. Hy. FM 1117, Proj. 1443-1-3, Gonzales Co., $64,845, est. $70,000; Wm. F. Romney, 1704 Euclid Bldg., Fort Lauderdale, Fla., course and surf. tr., 11.244 mi. Hy. FM 2441, Proj. 269 (2), Dickens Co., $47,292, est. $74,000; Hahn-Tumlinson-Lloyd, Box 1272, Fort Worth, flexible base, one course surf. tr., 9.936 mi. Hy. FM 1061, Proj. 1061-1-3, Hockley Co., $67,003, est. $74,000; Hexible Base and Paving Co., Box 1, Pharr, flexible base, two courses surf. tr., 6.201 mi. Hy. FM 436, Proj. 436-1-31, Hidalgo Co., $94,435, est. $73,000; state highway improvement, one course surf. tr., 8.201 mi. Hy. FM 1426, Proj. 1426-1-31 and 1426-2-31, Hidalgo Co., $68,652, est. $70,000; Hoover & W. Perry, 1021 Lawnview Bldg., San Antonio, flexible base, one course surf. tr., 10.474 mi. Hy. FM 18, Proj. 1274-1-3, Uvalde Co., $67,477, est. $74,000; Hexible Base & Paving Co., Box 1, Pharr, from Garland A. Kay, P.O. Box 6086, Tyler, flexible base, one course surf. tr., 10.402 mi. Hy. FM 1252, Proj. 1252-1-17, Rusk Co., $98,952, est. $96,000; from C. Hunter Imam, P.O. Box 10757, San Angelo, one course surf. tr., 63.96 mi. Hy. U. S. 81, Proj. C 212-4-14, C 212-4-17, C 212-4-21, C 212-5-21, C 212-6-21, C 212-7-21, C 212-8-21, C 212-9-21, C 212-10-21, C 212-11-21, C 212-12-21, C 212-13-21, Clay, Montague, Wise, Jack, Parker and Hood Cos., $62,024, est. $74,000; from Texas Bitulithic Co., Box 2307, Houston, grading, flexible base, surf. tr., 4.047 mi. Hy. FM 2004 and 1960, Proj. S 1320-1-11 and 1320-2-11, Harris Co., $158,025, est. $156,000; from Texas Industries, Inc., Box 5030, Dallas, grading, flexible base, surf. tr., 4.047 mi. Hy. FM 1960, Proj. 1960-1-17, Harris Co., $124,850, est. $127,000; from Vernon Construction Co., P. O. Box 1348, Beaumont, one course surf. tr., 8.7 mi. Hy. FM 1442, Proj. 1442-1-3, Jefferson Co., $122,561, est. $127,000; from R. E. Smith, Inc., 3100 Green Haven St., Houston, flexible base, one course surf. tr., 10.324

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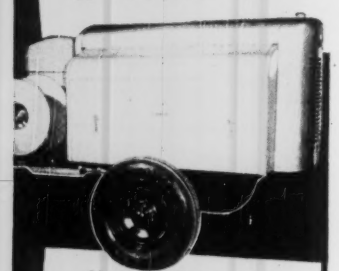

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Ky., beginning at S. R. 15 in Sylvester and extends toward Norman Park, 9.056 mi., Worth Co., to Tousont Constr. Co., Nt. version, $94,816***base and surf. and 1.1 mi. to 4.263 mi., Americus to S. R. 118 Road beginning at end of pavement in Americus and extend toward S. R. 118, Fed.-Aid Secondary Proj. 9-0647-1(2) and State Aid Proj. PR 705-a (2), Sumter Co., to Wheatley, Americus, $70,811. Grand total, $1,580,300. Bids 6/16. CD 6/7.

La., Opelousas—City plans paving various streets, to Lawton Constr. Co., Morgan City, $52,181. Bids 6/13.

Miss., Jackson—City, Street Improv. Project 328, Part 2, to Swift Paving Co., 1502 N. Mill, $91,325. Part 3, to Swift Paving Co., 1502 N. Mill, $180,911. Bids 6/23.

▲ Pennsylvania—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, structures, grading, drainage, paving 4.39 mi. Sect. 29 Eastern exten. of Turnpike from point at Lawrence-Beaver County line in Big Beaver Twp. easterly 26,141 ft. to point 240 ft. west of west type of P. & L. E. R.R. in Big Beaver Twp., Beaver Co., and structure, grading, drainage, paving 3.78 mi. Sect. 29-B, western exten. of turnpike from point approx. 220 ft. west of L. R. 37004 in Little Beaver Twp., easterly 19,975 ft. to point at Lawrence-Beaver County line, to Wolfner & Co., Inc., Jefferson Bldg., Syracuse, N. Y., $2,083,984. Bids 6/16. CD 6/15, under L.B.

South Carolina—State Hy. Dept., Columbia, paving, widen embankment 3.607 mi., being the approaches to Santee River Bridge near St. Stephen and construct detour at Santee River, F.B.-Sy. 21, Berkeley and Williamsburg Counties, to Thompson-Lawrence-Constr. Co., Atlanta, Ga., $225,888***grading, paving, 5.211 mi. streets and roads in North Charleston, Docket No. 11,345, Charleston Co., and grading, paving 6.882 mi. Roads 61, 135, 121, 171, and 179, 5.920 mi. and 5.521 mi., Spartanburg Co., to Sloan Constr. Co., Inc., Peoples Natl. Bank Bldg., Greenville, $79,922 and $82,625 respectively***grading, paving Secondary Roads, Dockets Nos. 17,245, Parts 1 and 2, 17,256, 17,259, 17,260, 17,262, 17,263, 17,263, 17,265 and 17,266, Dillon Co., to Dickerson, Inc., Monroe, N. C., $158,587***grading, paving 5.762 mi. 0.035 mi. streets in Little Rock and 4.707 mi. Roads 31 and 24 from Route 9 near Little Rock to Road 51 at Sinclairs Cross Roads, 5.511 mi., to Sloan Constr. Co., Marion, $55,433*** grading, paving 0.786 mi. Road 51 from end of pavement to Route 61, Docket 18,260, Dorchester Co., to Gunnar Lukey Constr. Co., Augusta, Ga., $87,432***grading, paving 7.446 mi., 2.827 mi. Road 100 from U.S. Route 52 southwesterly to county road and 4.619 mi. Route 327 from Route 52 westerly to S.C. Route 52, Dockets Nos. 21,244 and 21,302, Florence Co., to Kraft & Powell, Florence, $78,038***grading, paving 6.998 mi. Roads 66 and 100 from Road 10 in S.S. Mile easterly to Road 51 on Road 66 and Road 43 at Liberty to U. S. Route 178, 5.533 (1) and 5.544 (1), Pickens Co., to Reeves Bros. Constr. Co., Easley, $74,956*** grading, paving 0.000 mi. Route 76 at Harrell Rd. to Route 262 and from Route 764 near Conaree to Road ex. Docket Nos. 40,331 and 40,352, Richland Co., to Cherokee Inc., Sumter Hy., Columbia, $140,921. Grand total $983,822. Bids 6/13 awarded 6/16. CD 6/8.

Tenn., Memphis—City, City Hall, paving Watson and Turner Sts., to L. & M. Constr. Co., 843 Vance Ave., $100,059.

Washington—State Hy. Dept., Olympia, conc. surf., channelization 0.772 mi. Primary State Hy. 1, Kalama, Cowlitz Co., to Pacific Sand & Gravel Co., Centralia, $53,105***asph. conc. paving, non-skid single seal tr. 0.4 mi. Primary State Hy. 1, between upper crossroad to Issaquah Road and Easton to King and Kittitas Counties to Arundstad & Gravel Co., Everett, $99,206***paving, grading, draining, etc. 5.511 mi. Primary State Hy. 10-A, Okanogan Co., to C. F. Lindell, Ellensburg, $96,190***, conc. rein. 3,005 mi. Primary State Hy. 11, Four Lakes vicinity, F.A.P. Proj. S-0111(1), Spokane Co., to A. Degerstrom, Inc., Spokane, $15,061. Grand total $431,562. Bids 6/17. Wis., Milwaukee—[illegible] N. 2 St., to Highway [illegible], $203,907. Bids 6/14, awarded 6/20.

Quebec—Provincial, [illegible] road reconstr., Rapids Parent-Roberval, paving, Quebec-Lafleche to Chamouchouane-Parent, to Miron & Frere, 4 Park Ave., Montreal, $75,000 and $100,000 respectively.

EARTHWORK, WATERWAYS

BIDS ASKED

La., Lafayette—[illegible] A. 7.21, Lafayette Parish, Police Jury, Lafayette, levee [illegible] escav.

LOW BIDDERS

▲† California—Bureau Reclamation, Dept. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., concrete lining and struc. Madera Canal, Sect. 34, 8201 ft. long, 20.0 mi. NW. of Madera, Madera County, Spec. No. DC-3048, Madera Proj., $246,846. Alt. Alt. 1, $2,810,615. Schedule 2, from Lester Constructors, Baldwin Park, $447,304.

▲† California—Bureau Reclamation, Dept. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., embankment, Sta. 21 and Sta. 41 reinforcing, San Luis Waterway, Sta. 0 to Sta. 41, near Los Banos Wendota Canal, Contract No. 14-06-200-3, Spec. No. DC-3049, Delta-Mendota Canal, [illegible] Valley Proj., Los Banos, $1,162,515.

▲† California—[illegible] Eng., Wright Bldg., Sacramento, [illegible] Sacramento River Flood Control Project, levee setbacks near Rio Vista at Ryer Island and Egbert Tract along Cache Slough, mile 14.1 to mile 17.0, Spec. 04-167-50-76, from San Francisco Bridge Co., 503 Market St., San Francisco, $1,513,225. CD 6/14.

† Louisiana—U. S. Eng., Box 60, Vicksburg, Miss., June 14, approx. 6,000,000 cu. yd. channel excav., etc., Bayou Lafourche, Caldwell, Ouachita and Richland Parishes, CIVENG 22-052-50-173, from Atlas Constr. Co., Waxahachie, Tex., $547,200. CD 5/26.

† Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, June 16, approx. 2,000 lin. ft. timbered board revetment, Red River, Caddo Parish, CIVENG 26-047-50-280, from June Bug Sand & Gravel Co., Box 495, Pine Bluff, Ark., $85,287. CD 6/1.

† Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, June 16, constr. and sink approx. 2,950 sq. ft. framed willow mattress revetment, left bank Mississippi River, New Orleans, near Esplanade Ave., CIVENG 16-047-50-271, from Sam Carline, Inc., Berwick, $172,125. CD 5/23.

† Louisiana—U. S. Eng., P.O. Box 60, Vicksburg, Miss., June 20, earthwork and emergency dam, storage, Algiers Lock, Orleans Parish, CIVENG 26-047-50-273, from C. W. Wolfner & Co., Inc., Cotton Exchange Bldg., Houston, Tex., $504,322. CD 5/25.

† Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, June 20, removing, disposing approx. 161,000 cu. yd. channel material, Calcasieu River Pass, Cameron Parish, CIVENG 16-047-50-294, from Atlantic Gulf & Pacific Co., 15 Park Row, New York, N. Y., $60,580. CD 6/6.

† Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, June 20, repairing West and East jetties, Southwest Pass, Plaquemines Parish, CIVENG 16-047-50-265, from Hough, Dowgur & Co., 320 N. 4 St., St. Louis, Mo., $390,370. CD 6/1.

La., Bastrop—Morehouse Parish Police Jury, Bastrop, levee, 2,549,800 cu. yd. channel excav., from Joe W. Hendrix Commercial National Bank Bldg., Shreveport, $241,820. CD 5/25.

† Montana—Bureau Reclamation, Dept. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., June 15, 2.9 trashracks for river outlets and main units, Canyon Ferry Dam, Louisville, Missouri River Basin Proj., Spec. 3042, from A. Gunthard & Co., Ennis, Tex., $45,965. CD 5/24.

† Nebraska—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., June 15, schedule 1, 64,000 bbl. bulk portland cement for construction of Trenton Dam, Frenchman-Cambridge Div., Spec. 3080, Missouri River Basin Proj., from Ideal Cement Co., Denver National Bldg., Denver, Colo., $2.65 per bbl. f.o.b. Superior. CD 6/6.

† Nebraska—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., June 15, 4,450 ft. Superior Canal, Sta. 450 to Sta. 80.0, Superior Canal, Spec. 3038, Missouri River Basin Proj., from Roberts Constr. Co., 1018 Trust Bldg., Lincoln, $171,127. Est. $143,934. CD 5/18.

† N. M., Los Alamos—U. S. Atomic Energy Comn., Los Alamos, June 12, provide grassed areas and certain other erosion control features in housing and apartment areas, Inv. No. 291-50-110, from Winslow & McLinn, 3202 S. Huron St., Denver, Colo., and Roberts Nurseries, Colorado Springs Rd., Littleton, Colo., $263,668. CD 5/18.

† New York—U. S. Eng., Niagara and Bridge Sts., Buffalo, Zone 7, June 20, Second Stage, Catherine Creek Improv. Proj., Montour Falls, Oswego River Basin, Serial No. CIVENG 30-023-50-61, from L. S. Martin, Inc., $79,366. Est. $94,510. CD 5/25.

North Carolina—Pender County Drainage Dist., Bryan Marshlender, Clk., Supt. Court, Washington, June 14, clearing and excavation, from Lewis Constr. Co., Marion, $39,854. CD 6/8.

▲† Tenn., Tullahoma—U. S. Eng., Tullahoma, June 20, earth high, 2,930 ft. long earth-fill type dam, 170 ft. long concrete spillway sect., on Elk River, approx. 24 mi. southeast of Tullahoma, Proj. Spec. 15, to provide cooling water for testing equip. at Arnold Engineering Development Center, from Arundel Corp., Pier 2, Pratt St., Baltimore, Md., and L. E. Dixon, 404 S. California St., San Gabriel, Calif., $2,863,169. CD 5/24.

▲ Pennsylvania—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, 58 Market St., San Francisco, $1,518,—CONTRACTS AWARDED.

† Montana—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., embedded metalwork for four 51 ft.x45 ft. radial gates, Canyon Ferry Dam, Missouri River Basin Proj., Spec. 3036, to Puget Sound Bridge & Dredging Co., 2929 1st Ave., Seattle, Wash., $33,685. Bids 6/2, awarded 6/14.

P. E. I., Rand—Govt. of Canada, Hunter Bldg., Ottawa, ext. to wharf, at harbor, to Diamond Constr. Co. Ltd., 60 Carlton St., Fredericton, N. B., $86,108.

AIRPORTS

LOW BIDDERS

† O., Cleveland—PROPULSION SCIENCE LABORATORY—National Advisory Co. on Aeronautics, Brookpark Rd., June 9, 4 story, basmt., 3580x172 ft. propulsion science laboratory, 25 ft. deep, basmt. and 45 above ground, from Mumford Constr. Co., 1720 E. 22 St., $960,680. Est. $750,000. Burns & Roe, Inc., M[illegible] Asst. Airport, archt.

† Tex., Houston—HANGAR—Dpt. of Army, National Guard Bureau, c/o U. S. Property & Disbursing Officer,

Camp Mabry, Austin, June 30: hangar and maintenance shop rehabilitation. Serial No.: 41-242-60-32, from Argo Constr. Co., 4032 Ruskin St., $54,963.

PUBLIC BUILDINGS

BIDS ASKED

N. Y., Flushing—HOUSING—B.A. 7/12—New York City Housing Auth., 63 Park Row, New York, June 7, fans, appurtenances for Flushing Houses, Sect. 2 (Proj. No. NYS-521) in Meadow section of area bounded by Long Island R. R., Lawrence St., Roosevelt Ave. and Prince St., 11 towers, three. Plans deposit $75.

▲ N. J., Paterson—HOUSING—B.A. 7/21—Paterson Housing Auth., 29 Hamilton St., 246 unit housing, $3,246,000. Kelly & Gruzen, 45 Fifth Ave., New York, N. Y., archts. CD 6/12.

S. C., Newberry—BOILER HOUSE, etc.—B.A. 7/12—Newberry Co., Newberry, Silver House laundry house, laundry addn. Plans deposit $25. James C. Hemphill, Greenwood, archt.

La., Gretna—SCHOOLS—B.A. 7/12—Jefferson Parish School Bd., 524 Huey P. Long Ave., 1 story, brick 8 classroom Westwego School addn. in Westwego; 1 story frame Harvey School addn., repairs, in Harvey; 1 story brick 4 room Barataria Blvd. School addn. in Marrero. CD 5/29.

Mass., Springfield—HALL RECORDS—B.A. 7/12—Comr. Hampden Co., Charles W. Bray, chm., County Comrs., 55 Elm St., 2nd story, brick, steel, granite, Hall of Records addn., Elm St., $450,000, Morris M. Maloney, 220 Dwight St., archt.

N. Y., Brooklyn—SCHOOL—B.A. 7/12—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. extsn., Zone 7, general construction; plumbing and drainage; heating and ventilating; electrical lighting fixtures for P. S. 202, Avenue I and E. 54 to E. 55 Sts. Plans deposit $4 general constr.; $6 each others.

N. Y., St. George—LIBRARY—B.A. 7/12—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, general contract; plumbing, heating, electrical work and lighting fixtures for construction St. George Regional Branch Library addn., Central Ave. at Hyatt St., Richmond Boro. Plans deposit $10. CD 10/6/48.

N. C., Durham—HEATING PLANT—B.A. 7/13—North Carolina College for Negroes, Alphonso Elder, pres.; Durham, general contract; piping, electrical work, plumbing Central Heating Plant and underground distrs. sys. Plans deposit $25, general and piping, and $10 each plumbing or electrical work. L. E. Wooten & Co., Capital Club Bldg., Raleigh, engrs.

▲ Colo., Denver—HOUSING—B.A. 7/13—W. A. Gail, exec. dir. Housing Auth., 200 housing units, (Colo.-1-5), $1,000,000. Plans deposit $25. Smith & Hegner, Colorado Bldg., archts. CD 12/16.

▲ O., Cleveland—SERVICE—B.A. 7/13—City, City Hall, 2 story, burnt brick service bldg. addn. to City hospital, $2,500,000. Plans deposit $50. Hubbell, Smith & Reed, 1240 E. 29 St., archts. CD 2/3.

Tenn., Pulaski—SCHOOL—B.A. About 7/14—Giles Co., Pulaski Building, 100 Jefferson Boulevard, Hickerson & Jordan, 30449 3 Ave. N., Nashville, archts.

▲ N. J., Lodi—HOUSING—B.A. About 7/17—Lodi Housing Auth., Lodi, 196 unit housing, $1,000,000. Kelly & Gruzen, 80 Fifth Ave., New York, N. Y., archts. CD 8/23/49.

▲ Colo., Denver—HOUSING—B.A. 7/17—W. A. Gail, exec. dir. Housing Auth., 400 housing units, (Colo. 1-7), $2,000,000. Plans deposit $25. T. H. Buell & Co., 744 Lincoln, archts. CD 12/16.

† N. M., Shiprock—POWER PLANT—B.A. 7/26—Bureau Indian Affairs, Dpt. Interior, Interior Bldg., 19 and C Sts., N.W., Wash., D. C., heating and power plant for Navajo Indian Agency. Plans & specs. $10 ea. Jackson Stanley, Durango, Colo., archts. and engrs.

▲ Tex., San Antonio—HOSPITAL—B.A. 7/26—Bexar Co., Co. Judge Albert Armen, Court House, Robert E. Green Hospitals main and isolation remodeling and extension, $1,500,000. Extended date. Ralph H. Cameron, Travis Tower, archt. CD 6/23.

▲ N. J., Morristown—HOUSING—B.A. About 8/12—Morristown Housing Auth., Morristown, 75 unit housing, $1,000,000. Kelly & Gruzen, 80 Fifth Ave., New York, N. Y., archts.

LOW BIDDERS

▲ Calif., Los Angeles—[illegible] Bd. Educ., 1616 [illegible] Sch., from [illegible] Co., [illegible] St., San Gabriel, $1,925,000. CD 5/29.

▲ Colo., Greeley—[illegible] Weld County Public Hospital, Greeley, 1 story, 2 superstructure, 2 story basement, [illegible] Hospital, P. O. Box 69, Denver, $1,249,644. Sidney G. Fellows, 403 Greeley Bldg., archt. CD 5/22.

† Ga., Macon—ARMORY—[illegible] Office Bldg., Atlanta, for Macon Armory, [illegible] Co., Macon, $214,306. CD 5/15.

Kentucky (NOTE: Commonwealth of Ky., Div. Purchase, Frankfort, Ky., receives bids for [illegible] items listed below): [illegible] State Police, Ashland, Ky., from Geo. W. Fairbanks, Lexington, $366,562.

Mt. Fort Fairfield—ARMORY—[illegible] State Military Department, [illegible] Armory, [illegible] Co., Mt. Fort Fairfield, from A. P. Gilman, Inc., Augusta, $269,825.

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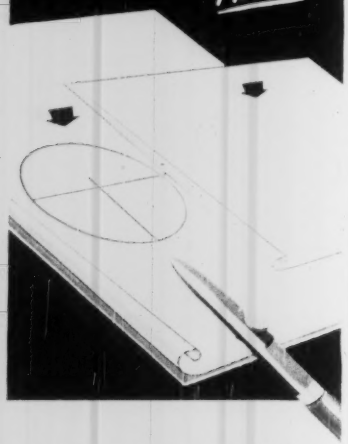

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† Md., Camp Detrick—[illegible]

Minn., Oroka—HOSPITAL [illegible] Capitol, St. Paul, [illegible] story, receiving hospital and [illegible] Peterson, Cherry [illegible] approx. $738,600. [illegible]

† Miss., Ridgeland—[illegible] Dist., Interior, Surface [illegible] 2d, school [illegible] age bldg., [illegible] Jackson. $128,493.

▲† N. M., Los Alamos—[illegible] Energy Comm., Los [illegible] industrial [illegible] training [illegible] Texas Utilities Co., [illegible] 1900 Wyandotte [illegible] $11,209,240

† N. C., Asheville—[illegible] Bldg., Swannanoa, [illegible] New Ling Co., [illegible] Palmetto Bldg. [illegible] $228,342

Okla., Oklahoma City—MEDICAL [illegible] Medical [illegible] $794,870

† Pa., Scranton—[illegible] $243,178

Pa., Slippery Rock—[illegible] $244,500

Pa., Somerset—[illegible] $274,440

† S. C., Greenville—[illegible] $224,672

† Tenn., Oak Ridge—[illegible] $120,345

Tex., Arlington—[illegible] $359,223

Tex., Canyon—[illegible] $384,241

Tex., Houston—[illegible] $379,500

† Tex., Houston—[illegible] $317,900

Va., Staunton—[illegible] $123,941

Wash., Fort Angeles—[illegible] $674

▲ Wash., Tacoma—[illegible] $1,132,200 [illegible] $129,314

† Wash., Yakima—[illegible] $137,800

▲† Alaska—[illegible] $8,835,000

CONTRACTS AWARDED

▲ Calif., Long Beach—GYMNASIUM, etc.—City School Dist., Locust Ave., gymnasium and swimming pool at Long Beach City College, to James I. Barnes Constr. Co., 504 S. Lafayette Park Pl., Los Angeles, $1,426,750 (Alt. 1, $1,249,500). Bids 6/15, awarded 6/19. [illegible] under LB.

▲† Calif., San Francisco—HOSPITAL—Pub. Bldgs. Admin., General Services Admin., Wash., D. C., operated by U. S. Public Health Service, Dist. 5, 630 Sansome St., San Francisco, general contract 9 story, concrete, structural steel, reinforced, U. S. Marine Hospital addn. Proj. 4-113, to Robt. E. Mayer, 4700 San Fernando Rd., West, Los Angeles, $3,786,600. [illegible] no. CD 5-25, under LB.

Colo., Buena Vista—ADMINISTRATION—State Colorado River Reformatory, Buena Vista, 2 story, L-shaped administration bldg. addn., to Folsom Constr. Co., 43 W. Colfax Ave., Denver, $306,932. Est. $300,000. Bids 6/22. CD 5-47.

Colo., Gunnison—PHYSICAL EDUCATION, etc.—Western State College, Gunnison, general contract 1 and 2 story, 152'x215' ft., physical education and health bldg., to King Constr. Co., 29 W. Cucharras St., Colorado Springs, $300,625. CD 5-17.

Ill., Freeport—SCHOOL—Bd. Educ., 2 story, cement, high school, to James M. Hugh & Assoc., 2 Park Ave., Chicago, Zone 37, $913,780. Bids 5/12, awarded 6/12. CD 5-24.

Mass., Newton—GARAGE—City, Mayor's Office, City Hall, 1 story, brick, concrete garage, housing police equipt., to James S. Smith Co., Inc., 249 Washington St., approx. $100,000. Bids 5/9. CD 5-34, under LB.

Minn., Austin—POWER PLANT—City, Bd. Water, Elec. & Gas & Power Comrs., Austin, turbine, install steam generating unit and misc. equipt. at municipal power plant, to [illegible] Co., [illegible] 510 New York Bldg., St. Paul, $428,000. Bids 6/20. CD 5-2.

Pa., Somerset—CONTINUED CARE—General State Authority, 1 more Sts., Harrisburg, general contract, addn. and Care Bldg. at the Somerset State Hospital, to [illegible] Nicola, [illegible] 2214 Broad St., Pittsburgh, $[illegible],000. Awarded 6/23. CD 4-[illegible], under LB.

Tex., Wichita Falls—HOSPITAL—Wichita Co., Tex. Hosp. Auth. for Wichita Co., Wichita Falls, 4 story, [illegible] masonry hospital addn. and [illegible] pool and swimming, to R. E. Montgomery Co., 1[illegible] N. Harwood St., Dallas, $848,492. Bids 6/21, 25, under LB.

Ont., Centralia—SCHOOL—Central Motorized & Housing Unit, [illegible] 141 St. W., Toronto 2, Canada, to [illegible] Constr. Co., 2[illegible] Yonge St., Toronto, [illegible] school, at R.C.A.F. Station, Centralia, for 2,160 to Sterling Constr. Co., [illegible] 2044 [illegible] St., Windsor, approx. $275,000. Bids 6/22. CD 6-1.

COMMERCIAL BUILDINGS

BIDS ASKED

Ga., Gainesville—[illegible] BANK—First National Bank, [illegible] Co., Inc., Atlanta, $[illegible] [illegible] [illegible]

N. C., Greensboro—[illegible] Elm St., Greensboro, Albert C. Woodruff [illegible] Engrs. & Assocs., 547 N. Davie St., Greensboro, [illegible] Bldg., Atlanta. Bids [illegible]

SOON LETS CONTRACT

Ala., Birmingham—[illegible] Alabama Power Co., [illegible] Birmingham, [illegible] Plans by [illegible] contract [illegible] [illegible] under LB.

La., Baton Rouge—THEATER—[illegible] Engrs., [illegible] & Main Sts., [illegible] under LB.

▲ O., Lakewood—APARTMENT—[illegible] Lakewood, [illegible] 1 & 2 bedroom apartment [illegible] $5,000,000. [illegible] Bids [illegible]

Tex., Fort Worth—[illegible] Modern Manor, [illegible] Fort Worth, [illegible] Lake Worth, [illegible] 1 & 2 bedroom [illegible] Bids [illegible]

LOW BIDDERS

Ala., Montgomery—APARTMENT—[illegible] Montgomery, [illegible] Bldg., [illegible] 1 & 2 bedroom apartment [illegible] $631,620

La., Shreveport—[illegible] Shreveport, [illegible] Peyton & Bagwell, [illegible] Commercial Bank & Trust Co., [illegible] $255,988. CD [illegible]

▲ Tenn., Kingsport—HOSPITAL—[illegible] Kingsport, [illegible] Hospital, [illegible] Mooney, [illegible] Kingsport, [illegible] $1,572,000. [illegible] 12 under LB.

Tex., Corpus Christi—[illegible] Bay Pearson, c/o [illegible] under [illegible] 412 Dixon Dr., T and [illegible] Corpus Christi, [illegible] Plan Bldg., [illegible] Bldg., [illegible] Houston, P. O. Box [illegible] $337,203. Est. $250,000. CD [illegible]

(Continued on page 82)

Painted for U. S. Pipe & Foundry Co. by Dean Cornwell

U.S.
cast iron
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

You have heard it said that "cast iron pipe is cast iron pipe"—a pipe that gives dependable, long-lived, low-cost service—no matter who makes it. And that is basically a true statement. Why then do we have customers who have regularly purchased from us for over 50 years? One reason is that we have pioneered developments that have resulted in process and product improvements over the years, just as today, through research and development, we strive still further to improve our product. Another reason is that we have been able to give our customers the type of service needed to meet their particular requirements. **United States Pipe and Foundry Co., General Offices: Burlington, New Jersey. Plants and Sales Offices Throughout U.S.A.**

USF

Box Corrugated STEEL UTILITY BUILDING

Large or Small

The USF all-steel Utility Building is your economical answer to either a portable or permanent structure at lowest cost. Frames are prefabricated and pre-fit formed steel that simply bolt together. Box corrugated steel roofing and siding sheets attach with clip-and-wedge fasteners. No special tools are needed, no field punching, welding or riveting. Manual erection is generally possible on all but long span trusses. Suitable for permanent use or readily dismantled and transported.

Sizes range from 10' x 12' floor plans to either 26' or 30' span widths in 10' and 12' clear heights for erection in multiple lengths of 13'-4". Full range of doors, fenestration, etc.

WRITE for complete data or quotation.

USF
UNITED STEEL FABRICATORS, INC.
WOOSTER, OHIO

(Continued from page 80)

CONTRACTS AWARDED

▲ Ala., Mobile—APARTMENT UNITS—Highland Terrace Apartments, Inc., c/o R. L. Jeffery, 2210 Second Ave. N., Birmingham, 250 apartment units. Owner builds. $1,500,000. CD 5/10.

Calif., Los Angeles—APARTMENT—Verdugo Mesa Corp., 3340 E. Wilson Ave., Glendale, 10 stucco apartments, to replace fire destroyed units at E. Wilson Ave., Glendale. Approx. $641,020. Edward P. Eiden, 1340 E. Wilson Ave., Los Angeles, archt.

Calif., Norwalk—DWELLINGS—Rudy Lumar, Inc., 5661 Hollywood Way, Burbank, 127 stucco dwellings, Teddy St., Fairfield, Emmett, Oswalds and Crestwood Aves., Owner builds. $304,210. Paul Duncan, 4825 Laurel Canyon Blvd., Los Angeles, archt.

▲ Calif., Palo Alto—RESIDENCES—Community Builders, Inc., c/o Sunshine St., San Francisco, 100 residences on Green Acres Tract, near here. Owner builds, $4,000,000. Joseph L. Stewart, 204 Sunshine St., Los Altos, archt.

▲ Calif., Whittier—DWELLINGS—Diamond Co., 739 N. Highland Ave., Los Angeles, 216 stucco dwellings, Lemoran, Cali, Citronelli, Lindsay, and Topeka Sts., to Harper Constr. Co., 739 N. Highland Ave., Los Angeles. Approx. $1,510,960.

Calif., Whittier—DWELLINGS—Harold E. Williams Co., 5657 Wilshire Blvd., Los Angeles, 97 dwellings in Whittier. Owner builds. $679,000. Edward H. Fickett, 5657 Wilshire Blvd., Los Angeles, archt.

D. C., Wash.—SEMINARY—Ukranian Greek Catholic Diocese, c/o contractor, 3 story, summit, main bldg. and 1 story wing, and small chapel St. Josaphat's Ukranian Greek Catholic Seminary to Joseph F. Webel Co., 2142 P St. N. W., $420,000. Julian K. Jastremsky, 19 W. 44 St., New York, N. Y., archt.

Fla., Miami—HOMES—L. & B. Corp., c/o contractor, 102 homes to Babcock-Lamont Co., 3014 Coral Way, Approx. $750,000.

Fla., North Miami—RESIDENTIAL DEVELOPMENT—Suburban Homes Inc., c/o Norman A. Giller, archt., 1527 Washington Ave., Miami Beach, several residential developments. Owner builds, Approx. $250,000.

▲ Fla., Tampa—HOMES—Brooks Development Co., c/o Roy R. Brooks, 207 E. Lafayette St., Tampa, 139 homes. Owner builds. $1,300,000.

Ill., Evanston—SCHOOL, etc.—National Foundation of Funeral Services, Central St. and Ashland, 2 story, limestone, school and offices, E. Fong & Phillips, 134 N. LaSalle St., Chicago, Zone 6. $250,000. Awarded 6/14. CD 6/3.

Ky., Louisville—CHURCH and SCHOOL—Arch. Bishop Floersch, 3 St., Sisters' house and church and school addn., to A. J. Schneider Constr. Co., 7 St. Rd., $302,000. Bids 6/9, awarded 6/13. CD 4/14.

▲ Md., Upper Marlboro—APARTMENTS, etc.—Albert P. Dicker & Louis Gregory, 903 East 35 N. W., Washington, D. C., 2,500 unit brick garden type apartment, incl. shopping center, theater, recreation center, tennis court, swimming pool on 181 acre site, Indian Head Rd. and Livingston Rd., 5 mi. south of Washington, D. C. line. Owner builds. $17,000,000-$20,000,000.

Mass., Somerville—SCHOOL-CONVENT—St. Polycarp's R.C. Parish, T. F. Garrity, pastor, 100 Temple St., 2 story, 12-classroom, brick, concrete Parochial School-Convent, Mystic Ave., to P. F. Beresford, 269 Spring St., Medford. Approx. $250,000. CD 2/17.

Mass., Springfield—DORMITORY—Springfield College, P. M. Lambert, pres., 263 Alden St., 3 story, brick, steel, women's dormitory, annex, to J. C. Penney Co., 330 Bridge St. Approx. $250,000. CD 2/27.

Minn., Collegeville—DORMITORY—St. John's University, College of general construction, 3 story, summit, 47'x77' ft. men's dormitory, St. Cloud, Minn., Bids 6/21. Approx. $500,000. CD 2/25.

Miss., Natchez—OFFICE—Southern Bell Telephone Co., Fort Bldg., Atlanta, Ga., and toll office to Barnett-Thompson Co., 136 Elk St., N. E., Atlanta, Ga., $300,000. CD 4/20.

Mo., Kansas City—APARTMENT—Armour Towers, c/o Roy T. Hunter, 1 W. 10 St., Zone 6, 10 story, 81 unit Armour Towers, 1 W. 10 St., Zone 6, to be let in 1 or 2 contracts. $800,000. Lutter & Wilks, Weltmer Bldg., Zone 3, archts.

▲ Mo., Kansas City—HOUSING—Summit Homes, c/o W. F. Lyman, 1106 Grand St., Zone 6, 11 story 202 unit apartment, summit house on the Plaza Proj., 47 3rd Terrace St., to Winkler Constr. Co., Railway Exchange Bldg., Zone 6. $1,380,000. Gentry & Voskamp, 4 story, Zone 6, archts.

Mo., Springfield—HOSPITAL—Burge Hospital, 440 S. 7 St., 4 story brick addn. to hospital, incl. plumbing, heating, electrical work, to Burge Constr. Co., Bids 5/31. Approx. $534,100. CD 4/26.

Neb., Columbus—SCHOOL—St. Bonaventure Parish, Columbus, owners, contract school, convent and social hall, to Ramsey Constr. Co., Fremont. $277,950. Bids 6/13. CD 6/15.

▲ N. Y., New York—BUILDING—W. P. Chrysler Building Corp., Chrysler Bldg., Zone 17, 32 story approx. 75,000 sq. ft. addn. to Chrysler Bldg., to be known as Chrysler Building East, and contract bounded by Lexington and Third Aves., 42 and 43 Sts., to Walter Kidde Constructors, Inc., 140 Cedar St. $9,000,000. Reinhard Hofmeister & Kruger, 145 E. 32 St., archts. Sid. B. Pavers, 420 Lexington Ave., consult. Severud, Elstad & Krueger, 1267 6 Ave., structural engr. $29,34.

O., Brooklyn—HOUSING—Chandler Building Co., 4251 Nicky Kuhn Dr., to extend twenty 132 story, summit apartments, West Bolt, separate contracts. Approx. $250,000.

Tenn., Memphis — CHURCH — Evergreen Presbyterian Church, c/o contractor, church, to S. & W. Constr. Co., 983 Shrine Bldg. Approx. $400,000.

Tex., Dallas—SHOPPING CENTER—W. W. Caruth, Jr., c/o Caruth Corp., 5803 Greenville Ave., construct unit of Group 2 shopping center, facing Inwood Ct., own forces. $275,000. Walter W. Ahlschlager and C. M. Smith, 212 S. St. Paul St., archts. and engrs.

Tex., Dallas—DWELLINGS—Vernon & James Smith, Liberty Bank Bldg., addn. dwellings, south of Wynnewood Addn. Owner builds. $300,000. CD 11/7.

Que., Hull—DWELLINGS—Logement de Hull, Inc., 370 Maisonneuve St., 75 dwellings, Owner builds. $350,000.

INDUSTRIAL BUILDINGS

BIDS ASKED

Ga., Thomaston—WAREHOUSE, etc.—B. A. 7/12—Upson County Electric Membership Corp., warehouse and office. Extended date. Southern Eng. Co., 1000 Crescent Ave. N. E., Atlanta, archts. CD 6/16.

Ga., Eastman—WAREHOUSE, etc.—B. A. 7/17—Ocmulgee Electric Membership Corp., Eastman, warehouse and office. Southern Eng. Co., 1000 Crescent Ave. N. E., Atlanta, archt. CD 6/16.

Ill., Evanston—PLANT, etc.—Bids Asked—Standard Rate & Data Service, Lyons and Ridge Sts., 2 story, summit, printing plant and office. $150,000. Mayer & Mcilrath, 626 Grove St., archts. CD 1/3.

SOON LETS CONTRACT

Md., Baltimore—AUTO SERVICE—Park Circle Motor Co., 3420 Reisterstown Rd., soon lets contract 1 story, 125x130 ft. brick concrete steel auto service bldg. Plans deposit $20. Lawrence B. Ritter, 3913 Cayuna Falls Parkway, archt.

▲ O., Cuyahoga Heights—PARTS DISTRIBUTION WAREHOUSE—Ford Motor Co., 3000 Schafer Rd., Dearborn, Mich., soon lets contract 1 story, 240x640 ft., brick block, steel parts distr. warehouse, Grant Ave. and Willow Freeway. $1,500,000. E. A. Fairbrother & Co., 345 New Center Bldg., Detroit, Mich., archts. Albert Kahn Assoc. Assoc. Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., consult. engr.

Tex., Houston—WAREHOUSE—Big Three Warehouse Co., c/o Irving Klein & Assoc., archts., 1317 Austin St., soon lets contract 96x132 ft. masonry, steel type, steel warehouse, concrete slab flr., Yale Ave. and 10 St. $85,000.

Ont., Paris—FACTORY—V. G. Stanton, 3 Yeo St., soon lets contract 60x80 ft. concrete structural steel factory, for Kraumagraph Ltd., 3 Yeo St., Paris, $100,000. R. M. Hall, 9 Cathay St., Galt, archt.

LOW BIDDERS

S. C., Clover—MILL—The American Thread Co., Clover, June 14 mill addn., from A. K. Adams, 542 Plum St. N. W. Atlanta, Ga., $220,727. CD 6/7.

Tex., Fort Worth—WAREHOUSE—Universal Mills, Inc., c/o Gaylord Stone, pres., Riverside St., 120x128., rein.-con. grain storage warehouse, Kings Hy., from Thomas S. Byrne, Inc., Fort Worth Natl. Bank Bldg. $70,000. C. M. Davis, Dan Waggoner Bldg., archt.

CONTRACTS AWARDED

▲ Colo., Grand Junction—MILL—Climax Uranium Co., Grand Junction, designer and constr. 50 to 100-ton per day capacity Uranium-Vanadium Ore Mill, to Stearns-Roger Mfg. Co., 1720 California St., Denver. Approx. $1,000,000.

Ga., Atlanta—PLANT, etc.—Swift & Co., Union Stockyards, Chicago, Ill., fertilizer plant and food factory, day labor. $190,000. CD 11/21.

Ill., Chicago—PLANT—Fry Metal Products Co., 5827 W. Lake St., Zone 44, 215x124 ft. plant, to Emil Bozowsky, 5314 W. 25 St., Cicero. $68,000. Awarded 6/15. A. J. Smithson, 308 Harris St., Evinsdale, archt.

▲ Kan., Lawrence—FACTORY—Westvaco Chemical Corp., 405 Lexington Ave., New York City, N. Y., Div. Food Machinery & Chemical Corp. of San Jose, Calif., chemical factory, to Bechtel Corp., 220 Bush St., San Francisco, Calif., $3,500,000.

Ky., Louisville—PLANT—Ford Motor Co., 3000 Schaefer St., Dearborn, Mich., mfg. plant addn., to E. W. Owens Co., 118 E. Main St., Bids 6/5, awarded 6/10. CD 5/2.

Ky., Louisville—WAREHOUSE—Glenmore Distilleries, Owensboro, concrete footings, sheet metal siding, warehouse, Yellowstone Distillery, to Dahlem Constr. Co., Baxter and Highland Sts., Zone 4. $123,000. Bids 6/12, awarded 6/16.

Ky., Louisville—PLANT—Union Carbide Co., 30 East 42nd St., New York, N. Y., plant to utilize waste own forces. $500,000.

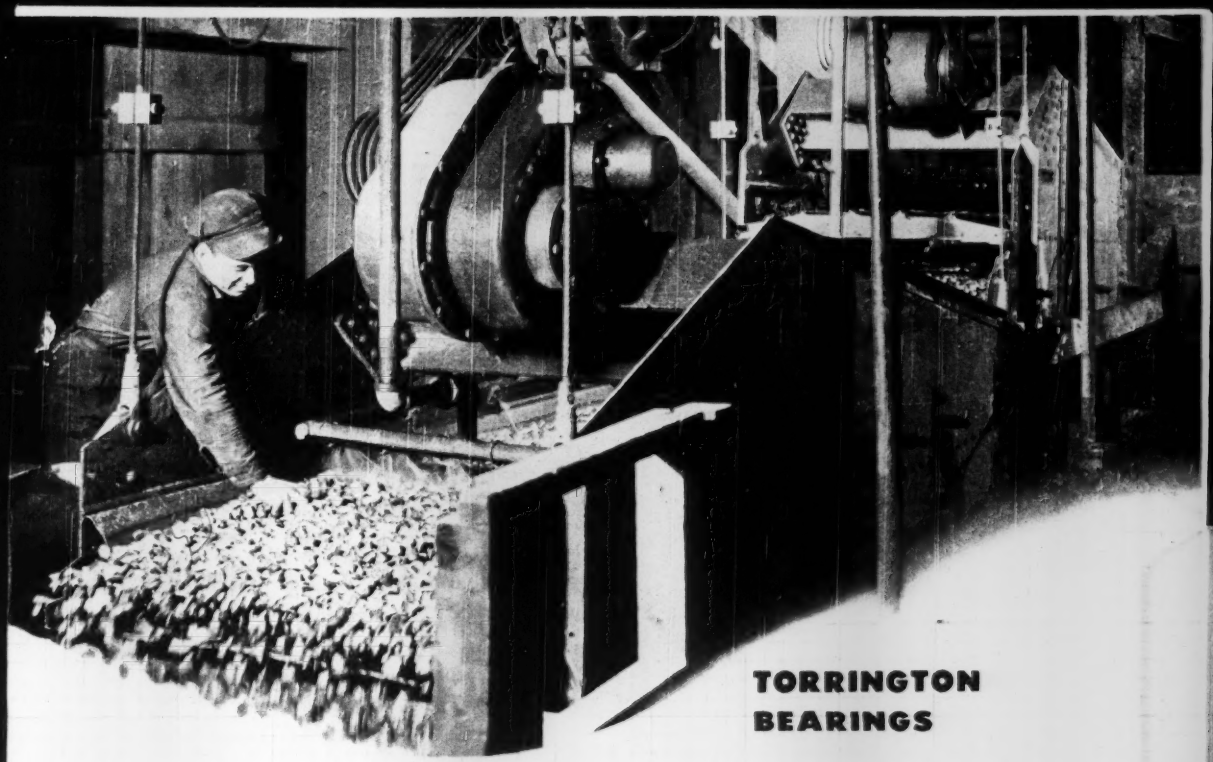
La., Baton Rouge—PLANT and OFFICE—Morning Treat Coffee Co., c/o contractor, plant and office, to Robert Thibodeaux, P. O. Box 867, Zone 1. Approx $68,000.

La., Lafayette—GARAGE—Down Town Realty Co., c/o contractor, auto garage for Evangeline Hotel, to Horace B. Rickery, P. O. 218. Approx $68,000.

Neb., Omaha—GRAIN ELEVATOR—Farmers Union Cooperative Elevator Federation, 206 Omaha Grain Exchange, grain elevator, to Tillotson Constr. Co., 1215 Jones St., Approx. $325,000.

O., Cleveland—GARAGE, etc.—Hertz Drive-Ur-Self Div. General Motors, General Motors Bldg., Detroit, Mich., 1 story, 180x230 ft. brick, block garage and ware-

(Continued on page 85)



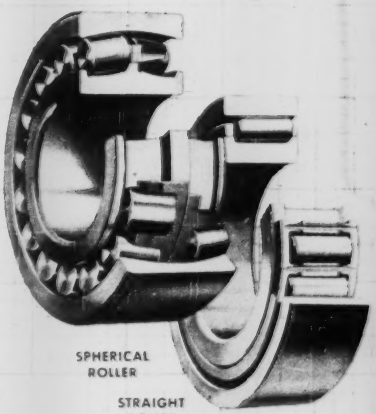
TORRINGTON BEARINGS

pass a tough screen test

Vibrating screens give a design engineer a tough problem in bearing selection. Satisfied with nothing less than the best screen performance, Allis-Chalmers engineers have devoted years of research in close cooperation with bearing manufacturers to develop precision bearings ideally suited to each specific screen application.

For example, in many Allis-Chalmers Ripl-Flo screens, two Torrington Spherical Roller Bearings are used to support the accurately-balanced eccentric shaft that imparts a perfect circle vibratory motion. Many Allis-Chalmers Low-Head screens utilize four Torrington Straight Roller Bearings to support the counterweighted shafts providing the straight-line vibratory motion. The results are high performance and low maintenance in both models.

It may pay you, too, to consult our engineers' special knowledge of all major bearing types in connection with your friction problems.



SPHERICAL ROLLER

STRAIGHT ROLLER

THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

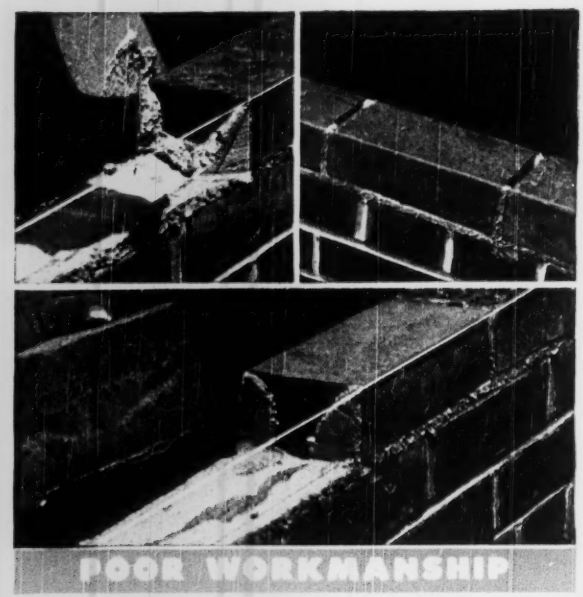
District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON BEARINGS

SPHERICAL ROLLER • TAPERED ROLLER • STRAIGHT ROLLER • NEEDLE • BALL • NEEDLE ROLLERS

GOOD BRICKWORK = GOOD DESIGN + GOOD WORKMANSHIP + GOOD MATERIALS

Plenty of mortar should be thrown on the end of the brick to be placed. The brick should then be pushed into place, so that mortar oozes out of the head joint.



When dabs of mortar are spotted on the corners of the brick, the mortar does not completely fill the head joint, and voids are still left.

FULL HEAD JOINTS, WITH BRIXMENT

HELP PREVENT LEAKY WALLS

WE SUGGEST THAT—

All head joints in both face brick and back-up work should be completely filled with mortar. If head joints are not completely filled, water may penetrate to the inside of the wall through openings in the joints. *Dabs of mortar spotted on the corners of the brick are not nearly enough to fill the joints.*

Take a look at the two examples shown at the left, and you'll instantly see why full head joints are an essential part of *good workmanship* in bricklaying.

No mortar material alone, not even Brixment, can make watertight masonry walls, so long as open crevices and pockets are left in the mortar joints.

Brixment mortar makes it far easier for the bricklayer to do good work. It is smooth and plastic—so soft and workable that the bricklayer can use enough mortar to fill the joint, and still "place" the brick easily and accurately to the line.

Brixment mortar has greater plasticity, higher water-retaining capacity and bonding quality, greater resistance to freezing and thawing, and freedom from efflorescence. Because of this *combination* of advantages, Brixment is the leading masonry cement on the market.

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

(Continued from page 82)

House, E. 49 St., to National Concrete Prestress Co., Terminal Tower, $250,000. Est. $166,000. CE 6-12.

Tenn., Knoxville—WAREHOUSE—S. G. & A. T. Moore c/o contractor, warehouse, 19 W. A. Colletti Constr. Co., Arcade Dr. Approx. $75,000.

Tenn., Memphis—PLANT—Southland Paper Co., c/o E. L. Harrison, archt., 81 Madison Bldg., paper box mfg. plant, to Seth S. Glenn & Assoc., Paper Bldg., Approx. $100,000.

Tex., Amarillo—WAREHOUSE—G. B. Realty Co., 1609 Young St., to Cook Warehouse, 16 Mac Borreson, Amarillo. $93,125. Bids 4-21. CD 4-10.

Wis., Milwaukee—PAPER FACTORY—Hummel & Downing Co., 1514 Thomas Ave., Zone 11, 2 story, 115x154 ft., reinforcement brick paper factory, addn., to S. N. Nielsen Co., 1059 W. Augusta St., Chicago, Ill. Bids 4-25. CD 6-1.

Alta., Calgary—PLANT—Alberta Ice Co., Tenth Ave., plant construction, separate contracts. $140,000. D. S. MacKay, Lineham Blk., archt.

Alta., Edmonton—GARAGE—Western Cartage & Storage Ltd., 10244 104 St., Edmonton concrete, brick garage, to Lougheed Constr. Ltd., Calgary. Approx. $125,000.

Ont., Chemong—DIAMOND DRILLING—Treadwell Lander Mines Ltd., 600 Bay St., diamond drilling under supervision of owners, Mine Clarence Heath, Kirkland Lake. Approx. $70,000.

Ont., Toronto—FACTORY—Customs Coverings Inc., 141 Broadview Ave., concrete brick stone factory, south of Dundas St., 1 st. to cutteridge Brothers Ltd., 86 E. Adelaide St. Approx. $70,000.

Que., Cutremont—WAREHOUSE—H. J. Heinz Co. of Canada Ltd., 6565 Durocher Ave., Montreal, warehouse, to D. Brenner Constr. Co., Ltd., 5965 Monkland Ave., Montreal. $260,000. S. Cormier & Son, 4444 W. Sherbrook St., Westmount, archts.

Que., Rouyn—PLANT—Rouyn-Noranda Press, 53 Main St., 1 story, 40x80 ft., cement block, brick printing plant, to Gamble St. Et., to Quinton Constr. Co., Waite and Pioneer Sts. Approx. $75,000.

Que., St. Hyacinthe—FACTORY—Composition Textiles Ltd., 305 Cascades St., 1 story, 300x420 ft., concrete brick truss, to Main Construction Co., Inc., Grand City Hotel Ave., Montreal. Approx. $75,000. M. W. Roth, 1015 W. Sherbrooke St., Montreal—engrs.

UNCLASSIFIED

BIDS ASKED

Miss., Baldwyn—NATURAL GAS SYSTEM—R. A. 7/19—Town, natural gas sys. $260,000. Plans deposit $25. T. O. Mabry, Jr., Division engr., CD 5-26.

O., Wooster—SWINE EXPERIMENT STATION—B.A. 7/19—Dist. P. Walz, S. D. Lingell, Columbus, Zone 15, swine experiment station at Ohio Agricultural Experiment Station, Wooster, to George Haspell & Assoc., 7015 Euclid Ave., Cleveland, Zone 3, engrs.

N. Y., Jones Beach—MARINE STADIUM—B.A. 7/24—Jones Beach State Parkway Authority, Belmont Lake State Park, Babylon, Contr. D, superstructure for Marine Stadium at Jones Beach State Park, Extended Bids, CD 6-15.

† N. Y., Albany—SITE IMPROVEMENTS, etc.—B.A. 8/3—Eng. Bd. Lafayette St., New York, Zone 11, site improvements, including utilities at Veterans Administration Hospital, to CIVENG 30-0575-51.

LOW BIDDERS

Ala., Sheffield—NATURAL GAS DISTRIBUTION SYSTEM—City, John H. Nelson, gas distribution sys., from T. M. Arey Gas Co., 3700 10 Ave. North, Birmingham. $402,691.

Ala., Tuscumbia—NATURAL GAS DISTRIBUTION SYSTEM—City, John H. Nelson, gas distribution sys., from T. M. Arey Gas Co., 3700 10 Ave. N., Birmingham. $282,530.

Calif., Los Angeles—WHARF—City Harbor Dist., City Hall, June 19, concrete timber wharf deck at Berths 175-178, Spec. 2146, from High Tension Cord, 1525 N. Jones St., $782,300. Est. $600,000. CD 6-1.

Md., Edgewood—AIR CONDITIONING—U. S. Eng., First and Integrity Sts., N.W., Wash. 25, D. C., June 21, air conditioning Bldg. 3555, Army Chemical Center, from Hyattsville Sheet Metal Co., 2322 N. Charles St., Baltimore. $79,823.

† Montana—PENSTOCK GATE HOISTS—Bureau Reclamation, Div. Interior, Bldg. 1A Sewer Federal Center, Denver, sets 3 & 4 penstock gate hoists with screens, one motor each, for Canyon Ferry Power Plant, Missouri River Basin Proj., Spec. 3010, from Pacific Coast Eng. Co., Los and Cement Sts., Alameda, Calif. $29,730. Bids 6-11, awarded 6-14. CD 6-2.

Pennsylvania—STREET LIGHTING, etc.—General State Auth., 18 and Herr Sts., Harrisburg, June 21, street lighting, parking lot, Somerset State Hospital, from Penn Eng. & Mfg. Corp., Punxsutawney. $54,775. $100,000.

Texas—EXPRESSWAY LIGHTING—State Hy. Comm., Austin, June 21, expressway lighting and traffic control, No. 5-67, Proj. No. 3183-4, Bexar Co., from Wright Bros. Electric Co., 403 Main Ave., San Antonio. $70,244. Est. $80,000. CD 6-2.

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3-A

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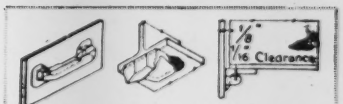

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† Wash., Seattle—PIERS, etc.—City, Engr., 4735 E. Marginal Way, Zone 4. June 21, smaller const. work north and south apron, Pier 32 and north and east apron, Pier 36, incl. work on bulkhead, deck, seawall addn., and floor. Pier Shed 36. ENG 45-108.90-138, from Larsen Bros., Dolman Bldg., Zone 4. $654,218. Est. $647,277. CD 6/8.

CONTRACTS AWARDED

Calif., East Los Angeles—STADIUM—Los Angeles Bd. Educ., 1425 S. San Pedro St., completing Stadium A at East Los Angeles Junior College, to Zeiss Constr. Co., 1037 N. Cole St., Los Angeles, $637,500. Bids 6/12, awarded 6/21. CD 6/20, under $.8.

Fla., Miami Beach—SWIMMING POOL—Arlington Hotel, c/o contractor, swimming pool, to S. C. Davis Constr. Co., 2815 Purdy Ave., Approx. $50,000.

Ill., Salem—DRIVE-IN THEATRE—Closter Circuit, c/o Loren Closter, Salem Theatre, 119 S. Broadway, 500-car drive-in theater on Route 37 near city, separate contracts. Approx. $100,000. CD 1/23.

La., New Orleans—SKATING RINK—A. H. Generes & Wm. Kerley, c/o contractor, skating rink, to E. B. Ludwig Constr. Co., 1350 Jefferson Hy. Approx. $175,000.

Mass., Pittsfield—DAM—City, Dpt. P. Wks., City Hall, repair concrete surface gunite process on dam, to National Gunite Corp., 101 W. Dedham St., Boston, $56,000.

Tenn., Bolivar—POWER LINES—City, electrical power lines, to G. B. Winsett & Co. Inc., Shrine Bldg., Memphis. $105,854. CD 3/18/47.

Tex., San Antonio—ELECTRIC LINES—City Public Service Bd., 201 S. St. Marys St., rehabilitation, underground overhead electric lines, to Austin Co., $150,000; 2nd gas booster station unit, $75,000. Purchase and Hire.

Va., Richmond—STADIUM—City, City Hall, addn. to Richmond City Stadium and laying sea pavement, to Howard-Mitchell Constr. Co., 10 W. Cary St., $53,-464. Merrill C. Lee, 110 W. 7 St., archt.

Sask., Regina—DRIVE-IN THEATRE—Famous Players Canadian Corp., Ltd., Royal Bank Bldg., Toronto, Ont., drive-in theater on No. 1 Hy., to A. W. Hesse & Co. Ltd., 807 Second Ave., Saskatoon, Sask., $150,-000. CD 12/12/49.

PROPOSED PROJECTS

WATER SUPPLY

Ill., Evergreen Park—Village, Village Hall, water works expansion, pump station, water reservoir, $150,000. Consoer Townsend & Assoc., 351 E. Ohio St., engrs.

Mass., Dighton—Town, Bd. Selectmen, Town Hall, 10 mo. distr. mains, elevated steel standpipe, pump station and equip. for Dighton Water Dist., $350,000. Whitman & Howard, 89 Broad St., Boston, consult. engrs.

Minn., Lauderdale—Village, Village Hall, $2,000 bonds, W&S syst., $143,000. E. H. Bergerud, 1340 Lincoln Ave., St. Paul, consult. engr. CD 5/18.

▲ Miss., Natchez—City, c/o W. J. Lyons, mayor, City Hall, voted $2,400,000 bond issue, July 11, sewer improv., $2,400,000. CD 1/6/47.

O., Sandusky—City, 1 m. 3 elevated water tanks, $150,-000. Layne-Ohio Co. & Schoonmaker, Seeley Bldg., engrs. CD 8/2/48.

Okla., Laxton—City, bond election July 18, W&S syst., $750,000. Edwards-Wallinger, Lawton, engrs. CD 6/27/48.

▲ Ore., Medford—City, City Hall, voted bonds, sewage pipe line from Hy. 99 to disposal area, new water supply, $2,800,000. C. D. Mills, city engr. Sewer, city engr. CD 5/24.

S. D., Rapid City—City, water sys. improv., $130,000. Claude Strasser, city engr.

Tex., Dalhart—City, E. G. Schuhart, II, mayor, Dalhart, W&S syst. expansion, extens., $150,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

▲ Tex., Dallas—City, City Hall, Main and Harwood Sts., voted bonds, W&S expansion, $7,800,000. J. E. Simmons, Jr., city engr. CD 5/24.

Tex., Galena Park—Town, voted bonds, water supply, storage, $75,000; water mains, distr. sys. & sys. rehabilitation, $175,000. C. Davis, city engr. CD 5/24.

Tex., Houston—Chocolate Bayou Estates, c/o W. F. Robertson, Sr., 745 First Natl. Bank Bldg., water lines, facilities for 530 acre tract in Chocolate Bayou Estates, near Holmes Rd., $100,000. Robert Atkinson, 1st. Natl. Bank Bldg., consult. engr.

Tex., Rolan and Roby—Towns of Rolan and Roby, 18 in. pipe line from Sweetwater to towns of Rolan and Roby, $750,000.

N. B., Fredericton—Municipality, 13 in. main from pump station to reservoir, 12 in. crosstown feeder, reservoir, etc. and 2 m.g. high level reservoir, $600,000. J. D. Mackay, City hall, city engr. CD 7/2/47.

SEWERS, WASTE DISPOSAL

Ark., Osceola—City, sewerage sys. improvs., extens., $157,000.

▲ Calif., Bakersfield—City Council, City Hall, voted $1,200,000 bonds, sewage treatment plant, $1,347,-000. Currie Eng. Co., Anderson Bldg., San Bernardino, consult. engr. CD 5/8.

Calif., Los Angeles—City Bd. P. Wks., 153 City Hall, sanitary sewers in Victory Blvd. and Kraft Ave., improv., $204,737. Lloyd Aldrich, city engr.

Calif., Taft—Ford City & Taft Heights Sanitation Dists., sewage collection lines and treatment plant, $161,-207. R. E. White, 2716 Oak St., Bakersfield, consult. engr.

Fla., Winter Haven—City, sewerage sys. addns., improv., Approx. $200,000. Russell & Axon Assocs., Daytona Beach, consult. engrs.

Idaho, Marsing—City, City Hall, sewer facilities, $105,-462.

Ind., Lapel—Town, Town Hall, sewerage sys., sewage disposal plant, Approx. $175,000.

▲ La., Baton Rouge—City, Baton Rouge Parish Council, Powers Higginbotham, mayor, Baton Rouge, drainage, incl. improvs. major outlets and master assmt. outlets, for removal of storm water, $7,752,668. Brown & Butler, Baton Rouge, consult. engrs.

Mich., Houghton Lake—Roscommon Twp., c/o High School Bldg., sewage disposal sys., $400,000. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago 11, Ill., engr.

▲ Minn., Ribbing—Village, G. J. Grady, clk., storm sewers, sewage treatment plant, improv. sanitary sewers, interceptor sewers, etc., $1,000,000. Bonn-ing & Anderlik, 549 University Ave., St. Paul, consult. engrs. CD 6/17/46.

Mo., Berkeley City (St. Louis 21, P.O.)—City, E. O. Walsh, mayor, City Hall, Airport Rd. and Helen Ave., bond election July 18 for trunk and lateral sewers, incl. 2 pumping plants with auxiliaries, appurtenances, etc., $650,000. Russell & Axon, 408 Olive St., St. Louis 2, Mo., consult. engrs. CD 4/7/49.

Mo., Stanberry—City, sewers, $118,955.

▲ O., Dayton—Van Buren Twp. Suburban Conservancy Dist., Comrs. Montgomery Co., Courthouse, sewage disposal plant on Greene Co. line at Shakertown, pipe sewerage sys. covering 1,341 acre tract, $1,-218,000.

O., Gibsonburg—City, intercepting sewers, sewage treatment plant on Portage River, $415,000.

Okla., Pauls Valley—City, voted bonds, sewage disposal plant, $250,000. C. E. Bretz, Commerce Exchange Bldg., Oklahoma City, consult. engr. CD 9/13.

Ore., La Grande—City, City Hall, voted $240,000 bonds, storm sewer proj. David C. Slaght, city engr.

S. D., Martin—City, City Hall, sewerage constr., $120,-000. Tillum Stavem, Rapid City, consult. engr. CD 1/13/49.

S. D., Rapid City—City, sewerage sys. extens., $550,000. Claude Hamp, city engr. CD 2/8.

Tex., Dalhart—City, E. G. Schuhart, II, mayor, Dalhart, sanitary sewerage sys. exten., $145,000.

▲ Tex., Dallas—City, City Hall, Main and Harwood Sts., voted bonds, incinerator, garbage disposal, $300,000; sanitary sewer lines, $2,000,000; storm sewers, $1,400,-000. T. J. Stanford, sewer engr. CD 5/24.

Tex., Galena Park—Town, voted bonds, sanitary sewer sys. rehabilitation, $150,000; sewage disposal plant, $100,000. C. Davis, city engr. CD 5/24.

Tex., Houston—Chocolate Bayou Estates, c/o W. F. Robertson, Sr., 745 First Natl. Bank Bldg., storm sewers, for 530 acre tract in Chocolate Bayou Estates, near Holmes Rd., $125,000; sanitary sewer lines, $150,000. Robert Atkinson, 1st. Natl. Bank Bldg., engr.

Tex., San Antonio—C. S. Bushy & Assoc., 319 Morning, 15 in. to 33 in. sanitary sewer (the running along Salado creek toward Austin Hy., $210,000; 12 and 15 in. sanitary sewer feeder lines radiating from Austin Hy. to Military Dr. and Nacogdoches Rd., $100,000.

Ont., London—Council, Mayor George Wenige, sewer extens. for new industrial area, $600,000. William Welsh, P.R. 1, Wilton Grove, engr. CD 9/6/49.

BRIDGES

▲ O., Zanesville—Comrs. Muskingum Co., Courthouse, $2,500,000 bond election Nov. 7, repair and rebuild bridges. CD 11/12/48.

STREETS AND ROADS

N. J., Mount Holly—Burlington Co., Mount Holly, reconstr. resurf. roads from Springside Chapel to Route 25, $60,000; reconstr. Front St., Florence, $60,000; reconstr. Red Lion-Vincentown Rd., approx. 5.4 mi., $55,000.

▲ Oklahoma—Oklahoma Turnpike Auth., Oklahoma City Bd. mbrs., Oklahoma Turnpike, $35,000,000. DeLeuw, Cather & Co., 150 N. Wacker Dr., Chicago 6, Ill., engrs. CD 3/17/47.

Tex., Angleton—Brazoria Co., Courthouse, Angleton, road grading, drainage structures and oiling, Lake Jackson-Brazoria Short Route, $150,000. E. W. Barrett, co. engr.

Tex., Corpus Christi—City, addtl. reinf. con. sidewalks throughout city, $200,000. Robert L. Otto, city engr. CD 12/28.

Tex., Galena Park—Tex. voted bonds, street paving, reconstruction work. $350,000. C. Davis, city engr. CD 5-24.

Tex., Mc Allen—City voted bonds, sewage disposal, street improvs., land paving. $500,000. Stephen L. Clark & Worster, Wessels, consult. engrs.; CD 6-1.

Tex., Pasadena—City of Pasadena and Harris Co. Courthouse, Houston, asphalt paving Pasadena-Houston Ship Channel, Spencer Rd. to Fairmont Parkway, Pasadena. $1,000,000. Geo. Wm. Smith, city engr., Hugo Zapp, Houston, consulting engr.; CD 6-29.

Tex., Port Lavaca—City voted bonds, 5 mi. asphalt. street paving. $350,000. CD 6-22.

AIRPORTS

O., Cleveland—Dept. of City Utilities, City Hall, Lake Erie and 6 St., Cleveland, plans runway extension, Lakefront Airport. $100,000. J. C. Merrick, city engr.; CD 11-24.

Ore., Roseburg—AIRPORT—City, City Hall, voted bonds, airport improvs. $200,000. Arthur Boyer, city engr.; CD 4-11.

LATIN AMERICA

Guatemala, Mazatenango—Min. of Fin., Miscellaneous plans airport, 2,000 meters long concrete runway 70 meters wide, plus buildings and hangar installations. $2,000,000.

Haiti, Port au Prince—Republic of Haiti, Port au Prince, plans carbon dioxide plant. $500,000. Ministry Works & Development, Port au Prince, engr.

Mexico, Comzacoalcos—Min. of Communications, Mexico, D. F., Mexico, plans federal bldg. $350,000.

Mexico, Mexico City—Asesor Legislativo, Paseo de la Reforma 1, D. F., Mexico, plans 18,000 seat auditorium, with factory. $250,000.

Mexico, Mexico City—Guerrero de Mex., S. A., Dolores, 22, Mexico, D. F., plans Mexican Products factory. $250,000.

Mexico, Mexico City—Mexico City Govt., Palacio Municipal, Mexico, D. F., plans 18,000 seat auditorium. $300,000.

Mexico, Mexico City—Pyrmo, S. A. de C.V., Juan N. Alvarez 40, Mexico, D. F., plans [illegible] factory. $300,000.

Mexico, Monterrey—Ferrocarriles Nacionales de Mexico, Balderas 22, Mexico, D. F., plans passenger and freight depot. $500,000.

Mexico, Morelia—Industrias Unidas de Mexico, S. A., Apartado Postal No. 1-10, Mexico, D. F., Mexico, plans [illegible] factory. $300,000.

Mexico, Saltillo—Secretaria de Marina, Saltillo, plans naval minister. $930,000.

PUBLIC BUILDINGS

Calif., Fortuna—(P.O. Eureka) Union High School Dist., Fortuna, voted $423,000 bonds, high school.

Calif., Los Angeles—OFFICE, etc.—City Bd. Educ., 2410 Beverly Blvd., plans by C. E. Dominguez, 2449 Hyperion Ave., for 2-sty. office and garage addn., 51 N. Hill St. $476,000.

Calif., Salinas—(P.O. Salinas) Salinas Union High Sch. Dist., plans by Chas. F. Eichner, 1112 Palace Park Way, Salinas, for Washington Union High School. $700,000. F. W. Kellogg, 625 Market St., San Francisco, engr.

Calif., Vallejo—SCHOOL—Vallejo Unified School Dist., Vallejo, plans by Masten & Hurd, 626 Bryant St., San Francisco, for high school. $483,000. CD 5-24.

Ga., Cartersville—HOUSING—Cartersville Housing Authority, Cartersville, plans by Francis W. Dean & Associates, 1776 N. Atlantic Bldg., Atlanta, for housing units, approx. $400,000. CD 11-25-24.

▲ Ga., Waycross—HOUSING—Waycross Housing Authority, Waycross, 200 housing units. $1,000,000.

Ia., Ankeny—SCHOOL—Independent School Dist., Ankeny, plans by Keffer & Mahaffy, Iowa Bldg., Des Moines, for high school. $400,000. CD 1-24.

† Ky., Fort Knox—THEATER—U. S. Eng., Fort Knox, plans theater. $500,000.

▲ La., New Iberia—HOUSING—City Housing Authority, Warren Jefferson, exec. dir., New Iberia, 400 housing units. $3,000,000.

N. J., Bound Brook—SCHOOL—Bd. Educ., Bound Brook, voted bonds, [illegible] school. $468,000.

N. Y., New York—LIBRARY—Columbia Univ., 116 St. & Amsterdam Ave., New York, plans by Voorhees, Gmelin & Walker, 101 Park Ave., New York, for library addn. $400,000. CD 11-24.

N. Y., New York—HOSPITAL—Beth David Hospital, 1st Ave. & 16 St., New York, plans by Harvey Wiley Corbett, 1 Rockefeller Plaza, New York, for [illegible] hospital addn. $630,000.

N. Y., New York—HOSPITAL—ESSEX—Bldgs. Dept., Municipal Bldg., plans by Harvey Wiley Corbett, 1 Rockefeller Plaza, New York, for [illegible] hospital addn. $690,000.

▲ N. Y., Oneonta—HOME—Eagles Mem. Foundation, Grand Aerie, 6 Adelaide Ave., Albany, plans by W. Powell Dutton, 11 Beaver St., Albany, for [illegible] Home, estimated to cost $1,300,000.

▲ N. Y., Schenectady—[illegible] plans by [illegible] for [illegible] $357,000; school for 1,140 pupils, $354,000; school for 600 pupils, $520,000; school for 240 pupils, $481,000; Central Park Junior High School, $862,020; High School, $4,032,000. CD 1-24.

(continued on page 89)

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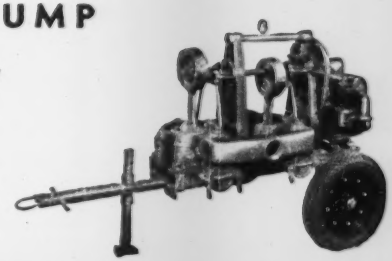

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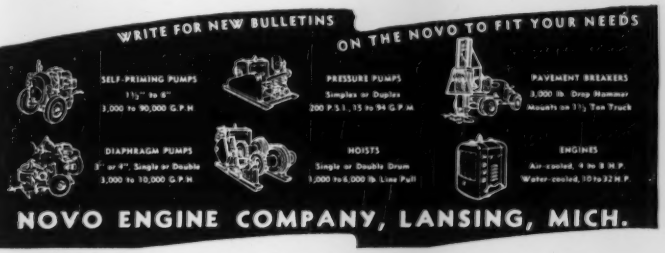

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Bethlehem Reinforcing Bars

(continued on page 87)

N. C., Winston—HOSPITAL—Forsyth Co. Wm. R. Allen, Jr. and Lee H. Harvey, Winston bond election July 8, general hospital, $1,500,000. CD 2-17.

▲ O., Lorain—SCHOOLS—Bd. Educ., 1220 Seventh St., plans by Fenton, Kinney & Delamotte, 6014 Euclid Ave., Cleveland, 3 schools, Lakeview, Palm and Fairhaven, Eng., $1,000,000. CD 2-24-50.

O., Toledo—SCHOOLS—Bd. Educ., Wm. S. Hamilton, asst. supt. in charge of business, Linwood Ave., plans by Seiman, Garrett & Richards, 518 Jefferson, 1-2-3 story, L shaped brick & steel school, bounded by Rogers Dr., Scott and Bush Lexington Dr. and Toledo Terminal R. R., $450,000. CD 2-17-50.

O., Warren—HOSPITAL WING—Trumbull Memorial Hospital, Warren, plans by Walker & Weeks, Detroit, architects, 4 or 5 story hospital wing, $750,000-$1,000,000. CD 10-29-49.

O., Youngstown—HOUSING—City, 9th W. Federal St., 150 dwelling units, 2 and 3 bedroom design.

▲ Tenn., Memphis—HOSPITAL—City, plans by Eason, Anthony, Mackie & Cox, Sterick Bldg., Negro hospital and nurses home at Jefferson and Dunlap Sts., $1,619,000. CD 4-28-44.

▲ Tenn., Nashville—LIBRARY and State, Nashville, library and archives bldg., $2,500,000. CD 11-29-48.

Tex., Hamilton—HOUSING—Hamilton Housing Auth., Sparrin Freeman, clerk, Hamilton, 100 unit housing, Approx. $750,000.

Tex., Mc Allen—HOSPITAL—City, voted bonds, hospital unit, $500,000. CD 6-1.

Tex., Paducah—HOUSING—V. L. Hutchison, chr., Paducah Housing Auth., Paducah, 100 unit housing, Approx. $800,000.

▲ Tex., San Antonio—SCHOOLS—San Antonio Independent School Dist., Leland Ave. and Wurzbach Sts., voted bonds, remodeling and expanding Main Ave. Negro school, $350,000; junior high schools, $6,268,000; cafeteria constr., $235,000; gymnasium, 4 girls' units, $850,000; Brackenridge High School remodeling, addn., $500,000; Thomas Jefferson High School remodeling, addn., $500,000; public school on Babcock Rd., $300,000; Municipal Auditorium, $550,000; remodel & construct Dwight Eisenhower High School, $450,000; addn. school on Lone Star Blvd., $250,000; public school, southeast unit, $250,000; public school, W. Houston Wilson Sts., $250,000; junior and Hidalgo school replacement, $275,000; elementary classrooms, $372,000. CD 6-6.

▲ Wis., Milwaukee—HOUSING—Housing Auth., of City of Milwaukee, 845 N. Market St., Edmund A. Johnson, 731 N. Jefferson St., Zone 2, housing, 150 units, area between 7th & 8th Sts., E. Lyon St. and E. Juneau Ave., $3,500,000.

N. S., Little Harbour—HOSPITAL—Municipal Council, E. Mosher, warden, plans by J. C. Tuttle, Dominion Sq. Bldg., Montreal, Que., 110 bed hospital, Approx. $550,000.

Ont., Glencoe—SCHOOL—Glencoe Dist. High School Bd., W. Fred Sexsmith, secy., Glencoe, plans by Charles H. Gillin, 284 Dundas St., Strathroy, 1 story brick, steel, concrete high school, $400,000. CD 6-1.

▲ Ont., London—HOSPITAL—Victoria Hospital Trustees, William Hartley, chr., London, plans by Lyon, Mc Watt, 343 Richmond St., hospital addn., $1,500,000. CD 4-6-50.

Ont., Sturgeon Falls—SCHOOL—High School Bd., C. G. Watson, secy., Sturgeon Falls, plans by J. B. H. Parsons, 5 Bloor St., Toronto, high school, Approx. $500,000.

COMMERCIAL BUILDINGS

▲ Calif., Los Angeles—OFFICE—Dennison Smith Corp., 210 W. 7th St., 10 story, reinforced concrete, office, 4799 Wilshire Blvd., $1,500,000.

▲ Calif., San Ysidro—RESIDENCES—U.S. Customs Service, to construct 4 single family dwellings, Cedar Creek, Ysidro, Harbor and Palm Sts., $1,500,000.

Fla., Lakeland—YACHT BASIN—Port Authority, Ernest Graham, chr., Lakeland, plans by Frank Lloyd Wright, Taliesin, Spring Green, Wis., 3 story marina, yacht basin, picture window theatre, swimming pool, $500,000.

Ill., Chicago—[illegible] Bd. of Trustees, [illegible] Chicago, [illegible] $400,000.

▲ Neb., Omaha—[illegible] Bd. of Trustees, [illegible] Omaha, [illegible] $5,000,000.

▲ Nev., Las Vegas—[illegible] Las Vegas, [illegible] $1,200,000.

N. Y., Brooklyn—[illegible] Brooklyn, [illegible] $500,000.

N. Y., Jackson Heights—APARTMENT—[illegible] Jackson Heights, [illegible] New York, [illegible] $350,000.

N. Y., New York—[illegible] Broadway, Zone 7, [illegible] $700,000.

▲ O., Cleveland—[illegible] Cleveland, [illegible] $2,000,000.

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▲ Pa., Harrisburg—APARTMENT—Gotham-Harrisburg Corp., 11 E. 36 St., New York, N. Y., plans by Edwards & Green, Broadway and Carman Sts., Camden, N. J., 7 story apartment, 2311-31 N. Front St., $1,000,000.

R. I., Providence—HOSPITAL—Rhode Island General Hospital, 593 Chalkstone Ave., plans by Howe, Prout, Kennard & Cutter, Howe St., 2 story industrial addn., and service bldg., $750,000.

Tex., Bellaire—HOUSING—C. B. Faulkner & Frank Thielen, Jr., West Bldg., wood, brick, stone, cedar shake siding housing, concrete slab fdn., in area of Lee Manor, $400,000. Howe & Wise, 4119 San Jacinto St., Houston, consult. engrs.

▲ Tex., Dallas—COMMERCIAL—Martin Assoc., 2401 Main St., plans by George L. Dahl, 2101 N. St. Paul St., masonry commercial bldg., Central Expressway, $1,000,000.

▲ Tex., Dallas—SANCTUARY, etc.—Park Cities Baptist Church, 4201 Lovers Lane, plans by Thomas, Jamieson & Merrill, 820 N. Harwood St., masonry sanctuary, $400,000; masonry youth activities, $325,000; masonry chapel, $275,000, in Park Cities, 8 acre site Northwest fly, east of Preston Rd.

▲ Tex., Dallas—OFFICE—Republic National Bank, 1815 Main St., plans by Harrison & Abramovitz & Rockefeller Plaza, New York, N. Y., 40 story, 254,000 sq. ft. masonry office and bank, 4 story, below ground level, power plant, air-conditioning, $15,000,000; 4 story masonry auto parking and repair garage, $450,000. CD 4/13.

▲ Tex., Dallas—HOTEL—Statler Hotels, 7 Ave. and 51 St., New York, N. Y., 800 room hotel, $10,000,000.

▲ Tex., Fort Hood (Killeen)—HOUSING—Fourth Army headquarters, Fort San Houston, military housing, $3,500,000.

Tex., Freeport—DWELLINGS—Syndicate, c/o Kenneth S. Rutherford, pres. Chamber of Commerce, Freeport, 35 dwellings, $265,000; 30 duplexes, $400,000; 45 unit apartment, $300,000.

▲ Tex., Handley—APARTMENT—Fox & Jacobs Constr. Co., Waggoner Bldg., Fort Worth, 650 rental apartment units on 131 acre site near here for Neupres, $2,000,000.

Tex., Houston—DWELLING—W. C. Bond, 213 Georgia St., 50 masonry frame dwellings, concrete slab fdn., off Holmes Rd., $450,000.

▲ Tex., Houston—DWELLINGS—Dryden Corp., c/o Mark Cresswell, 1st Nat'l. Bank Bldg., 150 masonry frame dwellings, concrete slab fdn., off Bright Rd., $1,200,000.

Tex., Houston—DWELLINGS—Earl Gregg, 2620 Bissonnet St., 50 frame masonry dwellings, concrete slab fdn., off Mad'regor Terrace, $425,000.

▲ Tex., Houston—DWELLINGS—W. C. Perkins, 701 Gulf Bank Bldg., 76 frame dwellings in area of S. Main Airport, $760,000; 100 brick dwellings in adjoining area south of Hedges Bayou, $1,248,000.

Tex., Houston—STORE and SUPERMARKET—Piggly Wiggly Corp., 1510 Gentry St., No. 5 masonry store and supermarket, concrete slab fdn., $300,000. No. 1 masonry store and supermarket, concrete slab fdn., $275,000.

▲ Tex., Houston—APARTMENT—Jerry Moore, 1 Room Motorist Inn, 2 story, 82 units by Joseph B. Reynolds, Consulting Engr., 2 story apartment, 2 story office, concrete slab fdn., 2 story apartment, 2 story office, concrete slab fdn., 2 apartment units, 2 story apartment, 2 story office, concrete slab fdn., 2 story apartment, 2 story office, concrete slab fdn., $1,000,000; 20,000 sq. ft. masonry shopping center, $250,000.

Tex., Houston—DWELLING—Shady Park Housing Co., 2 masonry dwellings, Shady Park Terrace Area, 4 apartment units, concrete slab fdn., in Sect. 2 of Shady Park Terrace, $504,000.

Tex., Houston—OFFICE—Mrs. Lillian P. Kempner, 3110 Kempner, masonry and trim, Travis and Leeland Ave., $400,000.

Tex., Houston—DWELLINGS—Lawrence Builders, 1200 Main St., 2 masonry dwellings, Macgregor Palms and Macgregor Terrace areas, $800,000.

▲ Tex., Lubbock—DWELLINGS—Urban Development Corp., 1 Lenox, Lubbock, 14 brick and stone veneer dwellings, concrete slab fdn., wood roof trusses, asphalt shingles, $3,750,000.

▲ Tex., Pasadena—DWELLINGS—C. B. Atwell & R. A. Mitchell, 31 Capen Bldg., Houston, plans by Atwell & Mitchell, 31 Capen Bldg., Houston, 2 story frame and brick veneer dwellings, concrete slab fdn., in area of Mobile Terrace, $1,000,000.

Tex., San Antonio—DWELLINGS—C. Lee Lee & Assoc., 1 masonry veneer dwelling, concrete slab fdn., $330,000.

▲ Tex., San Antonio—HOUSING—U. S. Air Force, Washington, D. C., 1 masonry veneer dwelling, concrete slab fdn., $375,000.

$424,000

$1,500,000

$1,176,000

Wis., Milwaukee—DWELLINGS—Wisconsin Builders, Inc., 1 Main St., Racine, 2 story frame and brick veneer dwellings, concrete slab fdn., $3,000,000.

$500,000

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Que., Quebec City—APARTMENT—Ste. Jean, 2245 Ste. Foye Rd., plans by C. A. Jean, 14 St. Augustin Rd., 40 unit, reinforced brick apartment, St. Joseph St., $540,000.

INDUSTRIAL BUILDINGS

Calif., Bakersfield—MARKET—Hoskins Development Corp., Bakersfield, plans by Stiles Clements, 210 W. 7th St., Los Angeles, 1 story, 22,500 sq. ft. reinforced brick, precast and structural, $350,000.

Conn., Hartford—ADDN'R—The Hartford Hospital, 80 Seymour St., plans by Buck & Buck, 650 Main St., 2 and 3 story, brick, concrete laundry, Retreat Ave., $425,000.

▲ La., Farmerville—POWER PLANT—Central Louisiana Elec. Co., 2142 N. Baton Rouge Ave., Baton Rouge, power plant, $2,285,000. H. A. Kurjan & Co., 1200 N. Robert St., Phila., Pa., consult. engrs. CE 12-27-49.

Md., Baltimore—SHED—American Can Co., 100 Park Ave., New York, N. Y., 1 story, 256'x322' ft., steel, concrete, train shed and truck loading dock, 2101 Pratt St., Canton, Baltimore, $600,000. CE 12-28-49.

N. Y., Bayside—GARAGES—Windsor Park Corp., c/o Hurwitz & Spindel, architects & Court Square, Brooklyn, 2 story, 2 garages, Bell Blvd., Rt. 25, Aves. and 219 St., $520,000.

▲ O., Dayton—FACTORY, etc.—Frigidaire Div., General Motors Corp., Dayton, 1 story, 1,000,000 sq. ft. factory, $9,000,000. $3,000,000 at Moraine City, near here.

Okla., Lexton—PLANT—Celotex Corp., 120 S. La Salle St., Chicago, 1 story, 2700 sq. ft. dry kiln addition, $250,000. Wm. H. Bell, Dir. F.S., Dearborn St., Chicago, engr.

Pa., Pittsburgh—MANUFACTURING—Pennsylvania Engineering Co., 5 E. First Ave., mfg. bldg., reinforcement, present mfg. bldg., Penn Ave., $310,000.

Tex., Galveston—COTTON PRESS, etc.—Conn. & Gulf Coast Broadway, expansion, cotton press and warehouse, $350,000.

Tex., Port Arthur—PLANT—United States Steel Products Co., Port Arthur, 1 story, type steel, concrete, pipe mill addition, $350,000.

▲ Alta., Calgary—PLANT—Canadian Industries, Ltd., Montreal, Que., commercial explosives plant, $1,000,000.

Que., Gaspe—SUPER DEPOT—DEVELOPMENT—Gaspe Copper Mines, Ltd., Noranda, development, copper mining, 30 mi. inland from Gaspe, $400,000.

UNCLASSIFIED

Colorado—RURAL DISTRIBUTION LINES—Morgan County Rural Electric Assn., Fort Morgan rural distr. lines and sys. improv., 42 mi. new lines, Morgan Co., $675,000. CD 6/13/46.

Conn., Milford—GAS SPHERE—New Haven Gas Light Co., 80 Crown St., New Haven, 60 ft. diam. gas storage sphere, $200,000.

Ga., Decatur—STADIUM—City, bond election Sept. 29 high school athletic stadium renovation, $239,000.

Indiana—RURAL DISTRIBUTION LINES—Rush County REMC, Rushville, 19 mi. rural distr. lines and sys. improv., Rush Co., $200,000.

Ind., Greenfield—DRIVE-IN THEATRE—Jacob W. Smiley, pres. Pioneer Album Co., Greenfield, drive-in theatre, incl. screen tower, projection and concession bldg., walks, drives, etc. on U.S. 40 between Gem and Cumberland Sts. Approx. $100,000.

Iowa—RURAL DISTRIBUTION LINES—S. E. Iowa Cooperative Electric Assoc., Mt. Pleasant, 227 mi. rural distr. lines, Henry Co., $367,000.

Kansas—RURAL DISTRIBUTION LINES—Radiant Electric Co-operative, Fredonia, 307 mi. rural dist. lines sys. improv., Elk, Labette, Montgomery, Neosho, Wilson Counties, $233,000. Flora Eng. Co., 504 Jackson St., Topeka, consult. engr.

Louisiana—NATURAL GAS PLANT and PIPE LINE—Marine Gathering Co., J. H. Blaffer, pres., Commerce Oil Co., Commerce Bldg., Houston, Tex., natural gas separation and dehydration plant, Gueydan area, Vermilion Parish, $400,000. 10 mi. 8 5/8 in. ocean going natural gasoline pipe line (liquid's first) 36 ft. below surface from shore line of Vermilion Parish extending out into Gulf of Mexico, drilling platforms, $350,000.

Missouri—RURAL DISTRIBUTION LINES—Central Missouri Electric Co-operative, Sedalia, 216.7 mi. rural distr. lines, incl. sys. improv., Pettis Co., $450,000.

Nebraska—PIPE LINE—North Central Gas Co., Cusser Wyo., gas distributing pipe line from Sidney Fields up to Sidney and distr. sys. in city of Sidney, $60,000; gas pipe line from fields north of Sidney to Dalton, Gurley and on to Bridgeport, $250,000.

N. Y., New York—PLAYGROUND—Dept. Parks, Arsenal Bldg., plans by Gustave Cherken c/o owner, playground and public comfort station, Cherry and Water Sts., Market Slip to Catherine Slip, $155,000. CD 1/14/46.

▲Ohio—TRANSMISSION LINES—Toledo Edison Co., Edison Bldg., Toledo, transmission and distr. lines, sub-stations and service facilities to be added during 1950 and 1951 in northwestern Ohio, $4,000,000. E. W. Mettler, c/o owner, engr.

Okla., Oklahoma City—BOWLING ALLEY—Cannon & Co., 2417 N. W. 49 St., plans by Pare & Aitchold, Petroleum Bldg., Zone 2, Bowling alley N. W. 23 and May Ave., $125,000.

South Carolina—RURAL DISTRIBUTION LINES—Pickens Electric Co-operative, Marcus Corder, mgr., rural distr. line headquarter facilities and improvements, $220,000.

South Dakota—RURAL DISTRIBUTION LINES—Finney-Hutchinson Electric Co-operative, Marion, rural distr. lines, Turner and Hutchinson Counties, $485,000. Buell & Winter, Insurance Exchange Bldg., Sioux City, Ia., consult. engrs.

Tennessee—RURAL DISTRIBUTION LINES—Holston Electric Co-operative, Rogersville, 30 mi. rural distr. lines, Hawkins Co., $505,000.

▲Texas—TRANSMISSION LINES—Lone Star Gas Co., 1915 Wood St., Dallas, distr. or transmission lines, Dallas area, $11,835,000; distr. or transmission lines, Fort Worth area, $7,655,776.

Tex., Bellaire—TRACT DEVELOPMENT—Bellaire Chamber of Commerce & Electric Assn., Box 74, Bellaire, Houston, 3,000 to 4,000 acre tract development for self-contained, full-fledged or separate municipality near here. Approx. $750,000. Hare & Hare, 114 W. 10 St., Kansas City, Mo., consultants for landscaping and master planners of entire development; includes golf course, $50,000; park, community swimming pool, $80,000; 12-hole golf course, $65,000; special airport and landing field, $75,000.

Tex., Galena Park—SWIMMING POOL—Town, voted bonds, swimming pool, $100,000. C. Davis, c/o engr., CD 1/24.

Tex., Waco—FAIR GROUNDS—Mckennon Co., D. Y. Mc Kennon, mgr., Waco, fair grounds group, storage, display bldg., $150,000.

Wash., Richland—SWIMMING POOL—School Bd., Richland, swimming pool, $160,000.

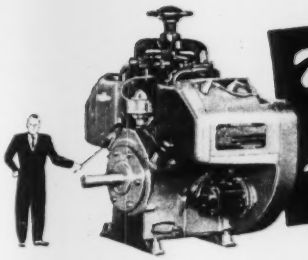
Wis., Milwaukee—HARBOR IMPROVEMENT—U.S. Harbor Line Bd., Chicago, harbor improvement program, including breakwater, $1,000,000; Passenger pier, $475,000; Freight pier, $850,000; Rail terminal, $300,000. Lloyd D. Knapp, City engr.

Wyoming—RURAL DISTRIBUTION LINES—Carbon Power & Light Inc., Saratoga, 61 mi. rural distr. lines, Carbon Co., $155,000. Wyoming Rural Electric Assn., Casper, 1,000 mi. rural distr. lines, Natrona, Converse, Carbon, Albany, Laramie, Platte, Goshen, Weston, Crook, Sheridan, Johnson, Campbell, Washakie, Hot Springs, Fremont, Big Horn, Park, Sublette, Lincoln, Uinta, Teton, Kearney and Denver Counties, $2,000,000.

▲Alberta—TRANSMISSION LINES—Power Co., Ltd., Edmonton, Alta., 138 kv. transmission line, Edmonton to Wetaskiwin, $2,000,000.

▲Que., Gaspe—DAM—Price Bros. & Co., Ltd., Quebec, dam at Chute-aux-Outardes on Manicouagan River, $1,500,000. Price Power Dept., Power Bldg., Montreal, Que.

(continued on page 101)



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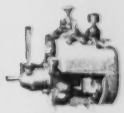
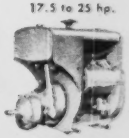


17.5 to 25 hp.

V VP-4



26.8 to 31 hp.

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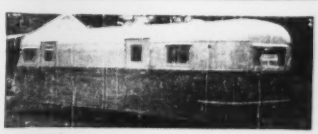

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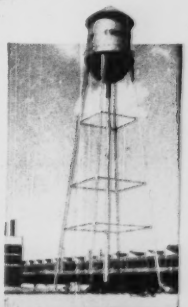

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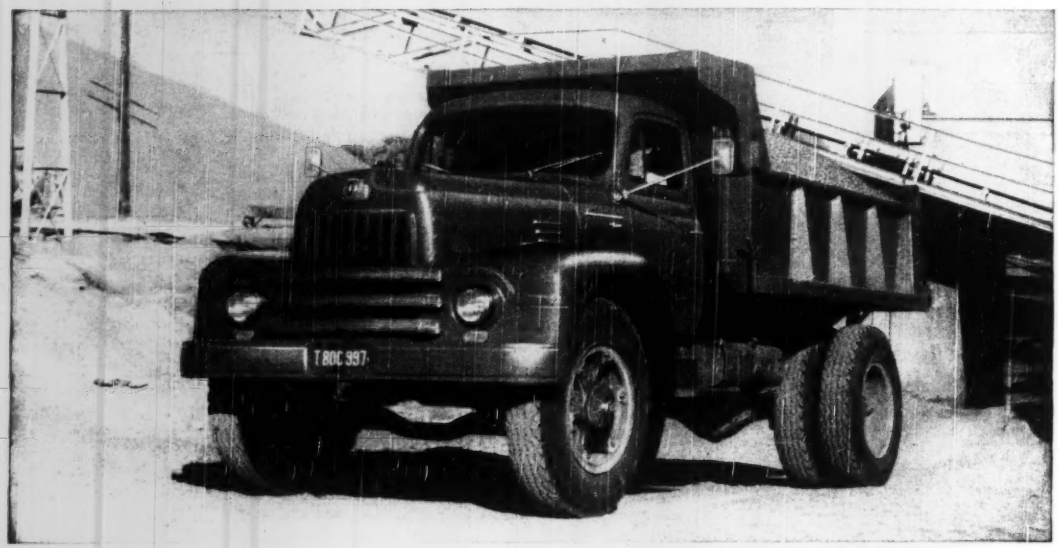

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August Materials and Labor Prices will appear in the Aug. 10, 1950 issue

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	PORTLAND CEMENT* Per bbl. C.L. lots incl. $1.00 per bbl. for bags, cash disc. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in., truckload del. per block	CONCRETE READY-MIXED Per cu. yd. 1.2.4, over 6-sk. del.
	Cloth	Paper	Bulk	Gravel 1½ in.	Gravel ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand, gravel, lt. wgt. agg.	5.0 sk. del.
Atlanta	$4.19	$3.45	$3.10	$2.00	$2.00	$1.75	$2.10	$2.10	$1.05	$1.85	$0.1725	$0.172a	$11.00
Baltimore		3.70	3.14	2.40½a	2.40½a	1.95½a	2.60½a	2.70½a	2.45½a	2.45½a	16	16a	10.25
Birmingham	3.80	3.00	2.68	2.24	2.24	1.84	2.50	2.50	1.00	1.20	145	145	7.75
Boston		3.67	3.41	2.50a	2.50a	2.50a	1.90a	1.70a			190	205a	10.45a
Chicago	3.89	2.99	2.74	2.75½b	2.75½b	3.20½b	2.75½b	2.75½b	2.00½	2.00½	20	20	9.70
Cincinnati	4.14	3.34	3.08	2.00½c	2.25½c	1.90½c	2.00½b	2.00½b	1.50	1.50	19	205	10.15f
Cleveland	3.83	3.03	2.78	1.90½f	1.65f	1.55	3.55½a	3.55½a	2.75½	2.75½		22	11.80g
Dallas	3.54	2.74	2.49	2.00	2.15	1.75	2.10	2.35			080e	125	9.30
Denver		3.64	3.29	2.00	1.15						20	23a	9.65
Detroit		2.98f	2.73	3.25½h	3.25½h	3.10½h	3.00 3.25½	3.00 3.20½	3.00½	3.00½	18	19a	9.85f
Kansas City		3.13	2.88	1.90	1.90	1.70½	1.95½	1.95½			175a	215c	10.40½
Los Angeles		3.72g	3.42g	2.04½a	1.74½a	1.70½a	1.92½	1.92½a			105f	210	10.02g
Minneapolis		3.34ef	3.07ef	2.30½ai	2.30½ai	1.95½ai	2.40½ai	2.40½ai			21c		10.40h
Montreal		2.40aic	2.31aic		2.50ci	2.00i	85ci	1.10ci			22	20a	9.05ef
New Orleans		3.05e	2.70e	2.32	2.32	1.82			1.05	1.25	.25		12.40
New York		3.40	3.24	2.10fk	2.10fk	1.45fk	2.35fl	2.35fl					10.50a
Philadelphia	3.93 4.23f	3.13 3.43f	2.87 3.17f	2.45f	2.55f	2.05f	1.90f	1.90f	1.50	1.50	18 .22		10.80f
Pittsburgh	3.90	3.18	2.85	2.05f	2.05f	2.00f	2.50f	2.50f	2.05	2.05	21d	21d	11.00
St. Louis		2.99 3.05f	2.80 2.86f	2.40 2.60fam	2.40 2.60fam	2.00 2.40fam	1.60f	1.60f	1.15	1.15	215	25en	9.40
San Francisco		3.30e	3.04	1.80	1.80	1.60	1.60					25c	10.15e
Seattle		3.55a	3.05a	2.75fm	2.75fm	2.75fm	3.50fm	3.50fm			22j	31.35j	10.25j

* Delivered. † Prices incl. dealer's comm. except as noted.
CEMENT: a Sold in 10¢ dis. b Less 2% for cash. c C.L. price dealers' comm. not incl. d Dealers sell only 1 C.T. e Plus switching charges. f Paving to $1.80 for cement brought in from outside sources.
SAND, GRAVEL, STONE & SLAG: a Truck lots. b Extra vol. c 5 tons. d Less than 5 tons. e Per gravel. f $2.50 for cash. g Less 5% for cash. h Sales tax incl. i For quarry. k Barge lots incl. l For screened. m Less 2% for cash.
CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete. e 8 x 8 x 12-in. f 8 x 8 x 16. g F.o.b. truck at job. h Less 2% for cash. i Less ½ for cash.
READY-MIXED CONCRETE: a 5 cu. yds. or over del. Mass. b 25 cu. yds. or more. c 1,000-lb. brackets. d 2,000-lb. cont. e Over haul 7 mi. zone. f 4% off for cash. g 2% off for cash. h Sales tax included. i 1:2:4.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month on carload deliveries; no trucking same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For cloth bags, add $1.05 per bbl.; 25¢ refund allowed for each returnable bag; for paper bags add 25¢ per bbl.; not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk	
Richard City, Tenn.	$2.40†	Bellington, Ind.	$2.30	Steelton, Minn.	$2.40	Muskegon, Mich.	$2.50†	Toledo, O.	$2.40†	Bulk
Clinchfield, Ga.	2.40†	Independence, Kan.	2.30	Leeds, Ala.	2.25	Saginaw, Mich.	2.35†	Milwaukee, Wis.	2.40†	
Kingsport, Tenn.	2.40†	Hannibal, Mo.	2.45	Duluth, Minn.	2.40	Wyandotte, Mich.	2.40†	Green Bay, Wis.	2.40†	
West Des Moines, Iowa	2.45†	Northampton, Pa.	2.40	Hudson, N. Y.	2.40	Buffalo, N. Y.	2.40†	Ironton, O.	2.40	
Nazareth, Pa.	2.40†	Universal, Pa.	2.40	Alpena, Mich.	2.25†	Oswego, N. Y.	2.60†	Montreal, Que.	2.15	
Bath, Pa.	2.40†	Waco, Tex. (+ 10¢ tax)	2.30	Detroit, Mich.	2.40†	Cleveland, O.	2.40†	W. Winfield, Pa.	2.40†	

† Prices to hold for third quarter of 1950.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 85-100 penetration		CUTBACK ASPHALT Per ton		ROAD OIL Per gal	ASPHALT EMULSION (Quick-breaking) Per gal	
	Granite Per M lots of 50,000 4x4x8 in.	Brick Per M lots of 50,000 3¼x4x8 in. cushion & filler	Wood 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	$73.00	$35.00	$2.25									
Baltimore	150.00‡	57.70‡		$21.00		$.085	$0.14	$.085	$.16	$.085a	$.085	$0.11
Birmingham		32.50										
Boston				24.50a	$35.50a	.030a	.185a	.115a	.205a	.10a	.113a	.205a
Chicago	155.00‡a	85.00	88.00‡b	2.75 3.40‡f	20.25‡c	30.25‡c	19.25‡c	29.25‡c	.0875‡d	.16‡d	.0750	
Cincinnati				21.50‡		.095	.085	.095a				
Cleveland		51.00‡	3.43‡	24.00	33.50	24.00	33.50	.10a	.22a	.10	.11	
Dallas	e	46.00	e	23.95	42.95	.1012	.1898	26.99	47.97	.0887	.1062	.1423
Denver		43.00										
Detroit		82.00		20.65		12.00a		.0975a		.0971		.187
Kansas City	e	e	e	18.05‡l				.07a	.075a	.0651e		
Los Angeles	e		e	12.50‡m		12.50‡e		14.00‡f		12.50‡e	.0775g	.1575g
Minneapolis			2.85‡	25.50	36.00	24.00a	35.00a	24.00	35.00	.09	.12	.22
Montreal	137.00	e	e	27.00a	36.65a	16.70a	18.50a	16.30a	18.30a	13.25a	.174a	.215a
New Orleans				16.50‡	e	16.50‡	e	.08a	e	.0775	.08	.1425a
New York			2.35‡	23.50	35.85‡	22.50a	41.85‡	.0940a	.1767a	.0860	.0940	.1747g
Philadelphia	150.00	110.00	4.00	23.00		22.00a		.0850				
Pittsburgh	165.00	42.00	4.50	22.00	35.00	10	22	27.00	39.00	.095	.09	.20
St. Louis				19.25‡		.1633		.0841a		15		
San Francisco		82.75e		14.50‡	30.00‡p	14.50‡n		16.50‡			.08	.14
Seattle				13.50‡	35.00‡	15.00‡		.1056a	.2052a	.10.00‡a	.084	.095

‡ Delivered.
PAVING BRICK & BLOCK: a C.L. b 3¾ x 4 x 8. c 2½ x 8½ x 4. d L.C.L. truck deliveries. e Not used. f 2" interior, 1" treat. g 3" & 8" treat.
ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery, Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segundo. e F.o.b. Baton Rouge. f F.o.b. Wood River or Hoosina, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martinez. i Bulk refinery. j F.o.b. refinery, Englewood, Calif. k 50/110 penetr. l Less than 100 penetr. m 30/40 penetr. n Tax incl. o Drums not asbl. p Shipped in steel bbl. q Use of used drums. r In customer's drums. s Shipped in drums per drum. t 55-gal. drums.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT. SHAPES PLATE	REINF. BARS billet	RIVETS ½ in. struct. total	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	Light	Re-rolled	TRACK SUPPLIES Angle Bars	Std. Spikes	Tie Plates	Track Bolts
Birmingham Area	$3.40	$3.45	$7.25		$68.00	$75.00	Not	$4.10	$5.00	$4.20	
Chicago Area	3.40	3.45	7.25	$4.20	68.00	75.00	quot-	4.40	5.00	4.20	
Pittsburgh Area	3.40	3.45	7.25	4.20	68.00	75.00	able	4.30	5.00	4.20	
Buffalo Area	3.45	3.45	7.25	4.20	68.00	75.00		4.40	5.00	4.20	$8.85
Cleveland			7.25								8.85
Youngstown Area		3.45							5.00		
Geneva	3.40										
Los Angeles	4.15								5.40		
Pueblo	3.40	3.45			68.00	75.00		4.40	5.00	4.20	8.85

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. Base price	REINFORCING BARS Per 100 lb., base price New billet	Rail steel	Mill switch	EXPANDED METAL LATH Per 100 sq. yd., carload lots $ cwt. for Del.	Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq. ft., carload lots 4x16 in., No. 5 & 10 wires	4x12 in., No. 8 & 12 wires	6x6 in., No. 6 & 6 wires
Atlanta	$5.85	$5.65	$5.65	$ 025	$ .10	$31.50	$31.50			
Baltimore	5.99	5.80			.10	40.00	43.00			
Birmingham	5.40	5.25	5.25	.05	.15	42.00	44.50			
Boston	5.75	5.60	5.60		.10-.15	44.00	33.00			
Chicago	5.25	4.90	4.90	.0025		32.00	34.50			
Cincinnati	5.70	5.50				34.00	36.50			
Cleveland	5.37	4.95			.10	34.00	36.50			
Dallas	6.75	5.85	5.85			44.50	46.00			
Denver	6.60	6.25				48.00	50.00			
Detroit	5.85	5.30			.10	37.00	40.00			
Kansas City	5.60	5.25				35.50	38.00			
Los Angeles	5.90	5.50			.15	38.00	40.00			
Minneapolis	5.60	5.20	5.20		.15	34.00	36.50			
Montreal	6.70	4.75	4.75			44.00	46.50			
New Orleans		5.00		.05	.10	38.50	41.00			
New York	5.60	5.38	5.35		.20	35.00	38.00			
Philadelphia	5.25	5.50				35.00	38.00			
Pittsburgh	5.20-5.30	5.20-5.30			.10	32.50	34.00			
St. Louis	5.58	5.41	5.41			42.00	48.00			
San Francisco	6.00	5.75			.15	37.51	40.00			
Seattle	5.90	5.50				42.00	42.00			

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C.I. PIPE	VITRIFIED SEWER PIPE Per Ton Delivered ASTM C 14-41 6 in.	8 in.	12 in.	24 in.	36 in.	CLAY DRAIN TILE ASTM C 4-24 Per 1,000 ft. carload lots, f.o.b. 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered ASTM C 14-41 12 in.	24 in.	WROUGHT STEEL PIPE Full standard weight
Atlanta	$86.50	$0.45	$0.65	$1.35	$7.10	$114.00	$140.00	$0.45	$2.00		
Baltimore	93.80	1.25	2.85	9.00	9.94	126.00	210.00	.70	2.25		
Birmingham	82.00	.60	.75	2.84		240.00	325.00	.90	2.00		
Boston	97.10	1.15	2.25	5.40	10.00	124.00	267.00	1.45	3.00		
Chicago	90.40	.44	1.08	4.25	13.25	130.00	220.00	.78	2.50		
Cincinnati	94.90	.90	2.84	5.65	9.25	148.80	230.70	.90	2.25		
Cleveland	97.13	1.28	2.90	3.15	8.71	140.00	210.00	.75	2.50		
Dallas	106.28	.90	1.67	2.90	9.25			.83	1.90		
Denver	104.30	1.60	2.60	2.98				.74	2.50		
Detroit	92.13	.65	1.21	4.86	13.12	210.00	320.00	.65	2.50		
Kansas City	98.41	1.05	2.00	3.00		215.00		.93	2.25		
Los Angeles	111.06	.68	.90	4.62	11.28	212.50	342.50	.72	2.05		
Minneapolis	91.80	1.20	1.35	4.50				1.20	3.00		
Montreal	100.00	1.25	2.50	4.42	7.26			72.00	218.00		
New Orleans	92.48	1.55	.85	4.41	8.85	243.00	312.00	.90	2.20		
New York	92.80	.85	1.10	4.40	11.00			1.00	2.50		
Philadelphia	90.42	.75	1.10	4.15	10.22	240.00	300.00	1.05	3.06		
Pittsburgh	97.26	.90	2.00	2.70	6.62	147.50	230.00	.75	2.50		
St. Louis	94.27	.51	.92	3.80	9.00			1.00	2.50		
San Francisco	111.50	.70	1.50	4.50	11.25	293.00	325.00	.90	2.85		
Seattle	102.90	.85	.91			250.00		.80	2.60		

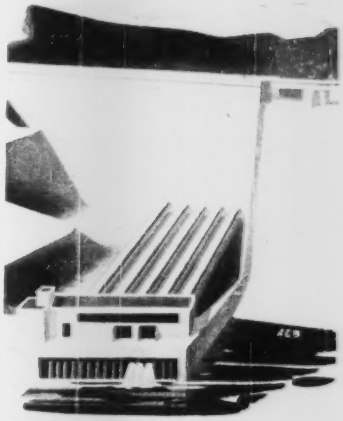
Delivered. Cl. A & B class. Boston, Cl. A, Burlington, N. J. Base. Class A. Based on selected lengths, subject to cash discount. Class A or pipe and class A & B pipe for additional 4 in., $3 per ton additional; 30 in. and larger, usually $1 per ton more. Extra strength, ASTM C 300-41. Cl. A, 8 in., $60. Reinforced, ASTM C 76-41. Reinforced, ASTM C 76-41. Reinforced, ASTM C 76-37. Centrifugal. Per 100 ft. Add for delivery. Listed price is based on LCL tonnage. Less than 6,000 lb. per price per ft. Within switching limits. ASTM C 14-41. Extra cash discount. 2 ft. lengths. 3 ft. lengths. CISA A 60-1941 specifications used. No standard specification in Canada. Freight allowed to destination in city. Truck loads, f.o.b. plant. Newton. LCL, delivered, f.o.b. truck. % off for cash. Not stocked, units made to order.

WROUGHT STEEL PIPE. Discounts from standard list, consumers carload prices. Base price, approx. $200 per net ton. List prices per ft.: Steel Weld: ¼ in., 35¢; ⅜ in., 38¢; ½ in., 51¢; ¾ in., 71¢; 1 in., 1.04; 1¼ in., 1.42; 1½ in., 1.62; 2 in., 2.16; 2½ in., 3.27; 3 in., 4.21; 3½ in., 5.05; 4 in., 5.69. Lap Weld: ¾ in., 62¢; 1 in., $1.00; 1¼ in., $1.48; 1½ in., $1.62. Freight rates to destination to be added to price plus 3 percent tax on transportation.

WROUGHT IRON PIPE. List prices per ft., same as wrought steel pipe. Discount for Pittsburgh base: Butt Weld: ¼ in. and ⅜ in. black + 10.6 galv. + 33.0; ½ in. black, 4.6; galv. + 29.5; 2 in. black, galv. + 29.0. Lap Weld: 2½ in. to 4½ in. black + 11, galv. + 32.5; 5 in. to 8 in. black + 8, galv. + 28.0. Freight rates to destination to be added to basic delivered price.

(Continued on page 97)

Preventing Corrosion "Freeze-ups" in Penstock Expansion Joints...



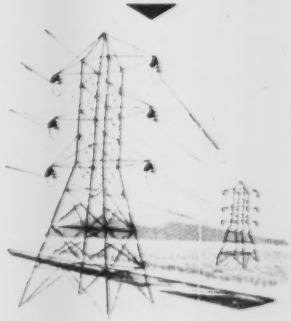
PROJECT: *To provide with practical economy and low maintenance, safe transfer of water to power house at Shasta Dam—a distance of some 835 feet—with allowance for expansion and contraction and to withstand temperature variation under all climatic and water conditions.*

DESIGN: *Five steel penstock lines with free-moving sliding expansion joints having inner sleeves of Lukens Nickel Clad Steel. Smooth, work-polishing nickel surfaces to permit freedom of motion and resist corrosion and cavitation. Steel backing to provide strength and rigidity.*

END RESULT: *Six years of safe, trouble-free service. No corrosion "freeze-ups", no buckling of lines regardless of weather. Minimum of inner sleeve maintenance.*

Here is an example of how the coordination of design, fabrication and materials selection provided the economical answer to a structural problem—just as in other cases it has resulted in equipment that not only lasts longer, but improves product quality and lessens production costs. This is applied *Lukenomics*. For Lukenomics combines the experience of designers, engineers and equipment builders with Lukens' knowledge of materials and their application gained over 140 years as the world's leading producer of specialty steel plates, heads and steel plate shapes.

It's sound investment insurance to put Lukenomics to work on *your* equipment problems. There are progressive fabricators who can do this for you. Get in touch with them or write our Manager of Marketing Service, stating your problem. There's a Lukenomics team ready to go to work on it. Lukens Steel Company, 513 Lukens Building, Coatesville, Pennsylvania.



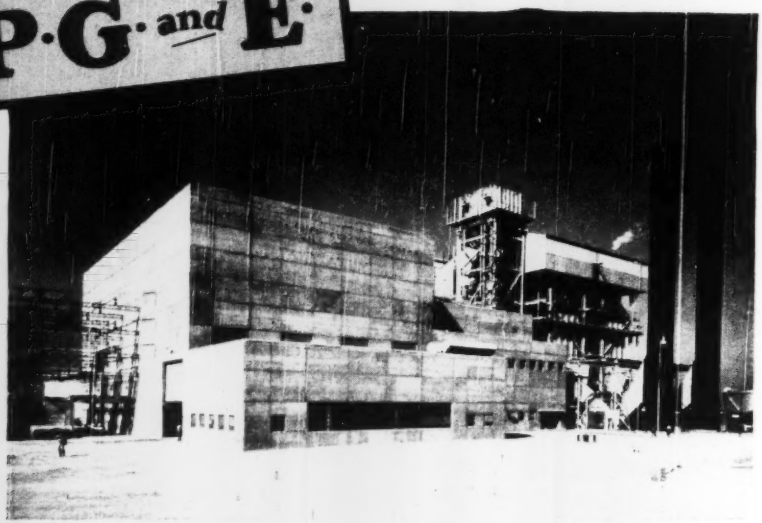
The expansion joints of penstock lines at Shasta Dam were designed and fabricated by Chicago Bridge and Iron Company for the U. S. Bureau of Reclamation. Lukens Nickel Clad Steel was used for the inner sleeves.

LUKENS

LUKENS STEEL COMPANY

BETTER PRODUCTS FOR BETTER EQUIPMENT

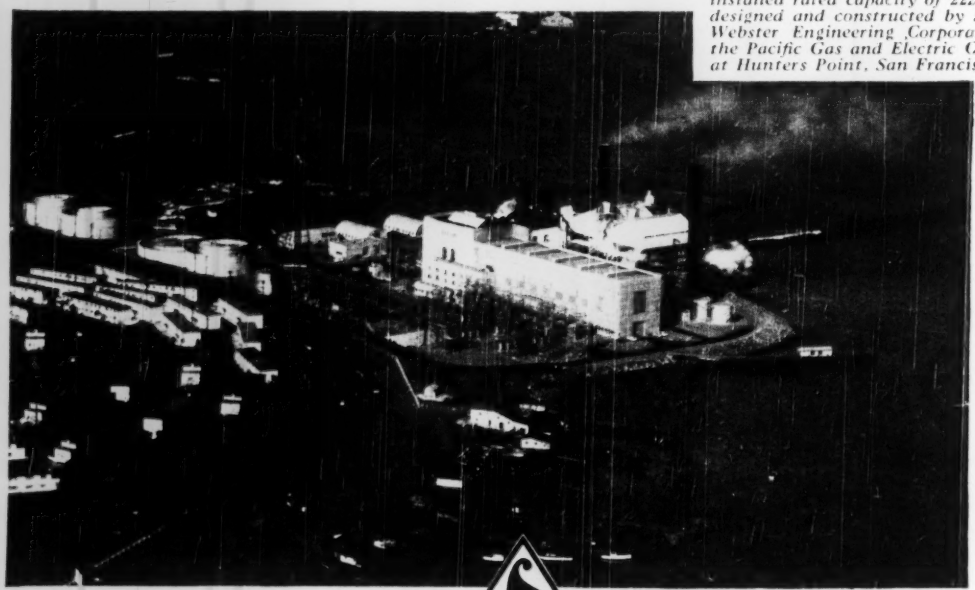
FOR P·G·and E·



The Kern Steam Plant and the extension to Station P of the Pacific Gas and Electric Company represent the finest examples in the country of centralized control in steam power stations.

The Kern Steam Plant, with an installed rated capacity of 175,000 kw, recently completed for the Pacific Gas and Electric Company in Kern County, about 300 miles south of San Francisco in the San Joaquin Valley.

The extension to Station P, with an installed rated capacity of 222,000 kw, designed and constructed by Stone & Webster Engineering Corporation for the Pacific Gas and Electric Company at Hunters Point, San Francisco.



STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY OF STONE & WEBSTER, INC.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR

All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Rtx. Prices in Bold Face†

All Fir boards, dimension, planks No. 2. Fir small timbers and timbers are No. 1. Lengths up to 20 ft.

Prices on follow

	1x6 S4S	1x8 S4S	2x4 S4S	2x6 S4S	2x8 S4S	2x10 S4S	8x12 S4S	6x12 S4S	12x12 S4S
Atlanta	† $71.00	$74.00	$66.00	$68.00	$72.00	$75.00	$75.00		
Baltimore	68.00	73.00	67.00	70.00	76.00	72.00	84.00		
	102 Std	*105 Std*	*105 Std*	*105 Std*	*105 Std*	*105 Std*	*105.00*	*848.50*	*848.50*
Birmingham	† 73.00	76.00	63.00	65.00	68.00	75.00	85.00		
	93.00	*95.00*	*84.00*	*84.00*	*84.00*	*84.00*	*84.00*	*84.00*	*84.00*
Boston	86.00	86.91	91.00	91.00	91.00	96.00			
	92.65	*91.95*	*98.65*	*83.85*	*83.85*	*101.165*	*101.165*	*101.165*	*101.165*
Chicago	† 91.93	92.94	83.85	92.93	97.98	100.101	100.102		
	100.108	*105.108*	*114.112*	*110.112*	*112.113*	*110.112*	*110.114*	*112.114*	*112.114*
Cincinnati	86.00	89.00	89.00	88.00	88.00	96.00	105.00		
	96.00	*98.00*	*98.00*	*96.00*	*96.00*	*96.00*	*96.00*	*120.00*	*120.00*
Cleveland**	95.00	97.00	90.00	95.00	97.00	99.00	110.00		
	96.00	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*125.00*	*135.00*
Dallas	63.00	70.00	61.00	53.00	56.00	57.00	90.00		
Denver	*No in stock*		*133.00*	*124.00*	*125.00*	*125.00*	*135.00*	*138.00*	*150.00*
Detroit	95.00	97.00	80.00	83.00	92.00	93.00			
	Weyerhauser on stock. Prices not available								
Kansas City*	112.00	119.00	125.00	122.00	126.00	128.00	138.00		
	† 112.00	*114.00*	*125.00*	*125.00*	*125.00*	*130.00*	*142.00*	*155.145*	*184.145*
Los Angeles	*† 103.00*	*105.00*	*105.00*	*105.00*	*105.00*	*105.00*	*115.00*	*128.00*	*128.00*
Minneapolis	*† 125.00*	*125.00*	*130.00*	*130.00*	*130.00*	*130.00*	*140.00*	*140.00*	*140.00*
Montreal	*† 73.50*	*77.50*	*73.50*	*75.00*	*78.57*	*82.15*			
	142.00	*142.00*	*142.00*	*142.00*	*142.00*	*142.00*		*140.58*	
New Orleans	† 75.00	78.00	74.00	75.00	78.00	80.00	*100.00*		
	† 88.00	*88.00*	*88.00*	*88.00*	*88.00*	*88.00*	*88.00*	*71.00*	*65.00*
New York	† 102.50	110 105	112.50	105 115	105 115	110 120	115 125	125 135	
	†			*Range from $115.00 to $125.00*				*125 135*	*125 135*
Philadelphia				**Range from $88.00 to $97.00**				88 97	
				Range from $110.00 to $120.00				110 120	110 120
Pittsburgh	† 85 90	85 90	85 90	85 90	85 90	90 100	100 00		
	† 96.00	*96.00*	*96.00*	*96.00*	*96.00*	*96.00*	*100.00*	*120.00*	*120.00*
St. Louis	† 101 50	104 75	92.50 96.50‡	96 50‡	104 25‡	108.50‡ 114‡			
	‡		*124 126.50*	*126.00*	*126.00*	*126.00*	*142.00*		
San Francisco	*† 65.00*	*65.00*	*65.00*	*65.00*	*65.00*	*65.00*	*65.00*	*65.00*	*65.00*
Seattle	*† 75.00q*	*75.00q*	*75.00q*	*75.00q*	*75.00q*	*75.00q*	*75.00q*	*75.00q*	*75.00q*

† Carlo mill. ‡ Delivered. § Retail f.o.b. * Yard prices.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* a Spruce. b Fir, except c 5M lots. d 8-12 ft. lengths. e 8-16 ft. lengths. f 18 ft. or under. g No. 1 common. h 10-12 ft. lengths. i 8 ft. lengths. j 10-16 ft. lengths. k No. 3 common. l 14-16 ft. lengths.

** Estimated. Price set day shipment is made, changing constantly.

	LONG LEAF Y. P.	PLYWOOD
	Merchantable grade up to 20 ft.	Rail freight increment (See note for base price)
		¼"
Atlanta		$22.32
Baltimore	$145.00	22.86
Birmingham	115.00	21.78
Boston	114.00	22.86
Chicago	122.125	18.72
Cincinnati		21.78
Cleveland**		22.20
Dallas	86.00	18.72
Denver		13.92
Detroit	97.00	21.78
Kansas City*		16.56
Los Angeles		13.38/h
Minneapolis		16.56
Montreal		
New Orleans	130.00	18.72
New York	210 240/f	22.86
Philadelphia	180.00	22.86
Pittsburgh	100 110	22.56
St. Louis		18.72
San Francisco		10.08/i
Seattle		

† Delivered. ‡ Retail f.o.b. * Yard prices.

PLYWOOD: Special concrete form grade Fir Plywood, 4 by 8, panels 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on 2", $177.00; on 2", $234.00. For other centers add rail freight increment from table on proper size. Oiling and edge sealing charges included. a Lowest rate by water shipment. b 50,000 lb. minimum.

* Freight rate increase of 6¢ per cwt., not included in these figures.

GLASS, EXPLOSIVES, CHEMICALS

WINDOW GLASS

Discounts from jobbers' list, Feb. 1, 1950:

Single or Double Thickness	A quality	B quality
Atlanta	70% c.w.	70% c.w.
Baltimore	80–10%	82 10%
Birmingham	83%	83%
Boston	83%	83%
Chicago	81%	81%
Cincinnati	81%	81%
Cleveland	81–10–10%	81–10–10%
Dallas	77%	77%
Denver	68 5%	68 5%
Detroit	81–10–10%	81–10–10%
Kansas City	83%	83%
Los Angeles	70%	70%
Minneapolis	80%	80%
Montreal	40–5% 5c	40–10–5% 5c
New Orleans	80%	83%
New York	85%	85%
Philadelphia	80%	82%
Pittsburgh	82%	82%
St. Louis	70–10–5%	70–10–5%
San Francisco	66%	73%
Seattle	54%	56%

Prices, f.o.b. jobbers' not over per box 14 x 20 or 24 x 18 in. Single strength, $2.75 for A quality, $2.50 for B quality. 16 x 20 in. $3.00 for A quality, $2.75 for B quality. c Discount from list. Sept. 1950, sales tax included. List 85% tax exemption not allowable for 3 single thickness. d Discount from list of Jan. 16, 1940. Less 10–10%.

e Approx. f From prices quoted, with extra charges in local storage and delivery regulations in the competitive retail quantity prices in less congested areas. g In boroughs of Kings, Queens, Richmond and in Manhattan south of 14th St., add per box, single A, $0.15; double A, $0.25; B, $0.25; triple, $0.40; double B, $0.50. h f.o.b. Belleau, near Montreal.

EXPLOSIVES

Per lb. 40% Ammonia Gelatin, carlots, delivered in 200 lb. lots:*

Atlanta	$0.2025
Baltimore	2025
Birmingham	1575
Boston	2025
Chicago	2025
Cincinnati	2025
Cleveland	2475
Dallas	2175
Denver	2075
Detroit	2025
Kansas City	2075
Los Angeles	2175
Minneapolis	2025
Montreal	1750
New Orleans	2125
New York	126
Philadelphia	2025
Pittsburgh	1775
St. Louis	2025
San Francisco	2075
Seattle	2175

40% Ammonia Gelatin price ranges in other than urban areas, per lb. except Seismograph Grades:

	C. L. 20,000 lb.	Less than 20,000 lb.
E. of the Miss. except Fla. and Me.	$0.1825	$0.2025
W. of Miss. to Ida. & Wyo. States		
Incl. Ariz. & Mont.	.1672	.1875 .20 .2075 .22
Rocky Mtn. States	.1625	.1875 .20 .2075 .225
Pacific N.W. States	.1575 .17	.19 .2025 .21 .2225
Pacific S.W. States	.1625 .1625	.1825 .195 .2075 .2175

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area, pine based on freight from Norfolk.

Dimensions	Points	Length	Price*	By Rail Fir
12 in. at butt	6 in.	30 to 50 ft.	$0.44	
12 in. 2 ft. from butt	6 in.	50 to 70 ft.	46	
12 in. 2 ft. from butt	6 in.	60 to 80 ft.	50	
12 in. 2 ft. from butt	6 in.	80 to 100 ft.		76
13 in. 2 ft. from butt	6 in.	90 to 100 ft.		80
13 in. 2 ft. from butt	6 in.	50 to 60 ft.	50	87
14 in. 2 ft. from butt	6 in.	70 to 75 ft.	54	91
14 in. 2 ft. from butt	6 in.	80 to 85 ft.	57	82
14 in. 2 ft. from butt	6 in.	85 to 90 ft.		84
14 in. 2 ft. from butt	6 in.	90 to 100 ft.		87

* Pine piling over 80 ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots

		6"x8"x8' Extra	6"x8"x8' Ex	7"x9"x8'6" Extra	7"x9"x8'6" Ex
Boston	Oak				
	Pine				
New York	S. L. Sap. Pine	$1.65	$1.90	$2.25	$3.40
	Mixed Oak	2.00	3.20	2.50	4.20
Birmingham	Hardwood	1.00	1.40		2.25/j
Chicago	Red Oak	2.50	2.60		3.75 3.45/j
Los Angeles	Douglas Fir				
	Redwood				
Philadelphia	Red Oak	2.35	3.15/c	3.10	4.25/j
St. Louis	White Oak	2.40		3.10	
	Red Oak	2.35	3.00/j	3.00	3.65/j
	Sap Pine or Cypress	2.00/j		2.70	
San Francisco	Douglas Fir	1.28	2.46/f	1.70/f	3.00/j
Montreal	Birch or Maple				

T: Treated. Untr: Untreated. c Creosoted. f 7"x9"x8'6" ex. j Limits cell. s Selects. † f.o.b. cars. ‡ No important price available. — Not available.

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works per 100 lb.	$4.50
Chlorine cylinders, liquid, per lb. f.o.b. works	.08–.12
Calcium chloride 77-80%, flaked, 100 lb. paper bag, f.o.b. works	
ton	25.00
Sulphate of soda, 52 deg. in drums f.o.b. works per 100 lb.	1.80
Soda ash 58% in paper bags, per 100 lb. dense	1.35
Sulphate of aluminum, commercial, in 100 lb. bags f.o.b. works	1.50
Sulphate of copper, in bags 99% per 100 lb. f.o.b. works	8.10

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION SCORED			STRUCTURAL CLAY TILE LOAD BEARING SCORED			BRICK		LIME	
	Per M (min. of 2,000 pieces or over)			Per M (min. of 2,000 pieces or over)			Per M (equivalent)		Per ton, In paper, Carload lot,	
	8x12x12 in.	8x12x12 in.	8x12x12 in.	8x12x12 in.	10x12x12 in.	12x12x12 in.	Common building	Straight hard	Hydrated finishing	Common hydrated	Pulverized or lump
Atlanta							$25.00	$25.00	$19.00	$17.50	$17.50
Baltimore	$175.00	$185.00	$225.00	$350.00			33.00	39.00	26.00	20.00	
Birmingham	97.50	104.00	145.00	241.00			20.00	22.50	24.74	18.00	
Boston	140.00	145.00	280.00	317.00			32.00	35.00	30.80	26.40	
Chicago	115.00	125.00	230.00				21.00	24.00	28.50	23.00	
Cincinnati	171.00	181.00	350.00	278.00	355.00	405.00	32.50	44.00	24.25	24.25	24.25
Cleveland	118.00	126.00	256.00				30.00	30.00	24.00	22.00	27.50
Dallas		110.00					18.75	23.25	32.00	24.80	
Denver							32.00	32.00	34.56	28.16	34.00
Detroit	117.00	124.00	234.15		$290.80	$332.22	33.50	32.00	28.00	26.50	
Kansas City	115.50	122.00	245.00	245.00	303.50	367.00	25.00	25.00	28.50	22.50	25.00
Los Angeles							20.00		36.00	36.00	32.00
Minneapolis	158.00	176.00	330.00	176.00			31.25	35.25	35.00	26.00	35.00
Memphis	125.00	135.00	255.00				25.50	25.50	22.50		22.50
New Orleans	160.00	170.00	300.00				29.00		38.00	26.00	37.50
New York	118.20	128.00	174.36	180.36			33.00		34.40	26.80	
Philadelphia	126.40	134.80	252.00	302.74	361.35	455.74	27.00	30.00	31.00	19.50	24.50
Pittsburgh	112.00	117.00	180.00	216.00	276.40	317.80	28.00	28.00	24.00	22.00	27.00
St. Louis	120.00	125.00	255.00		306.00		34.50	32.50	60.50	60.00	1.00
San Francisco	132.00	148.50	198.00	148.50			33.00		25.00	25.00	2.40
Seattle	150.00	160.00		160.00			32.00		34.00	34.00	4.00

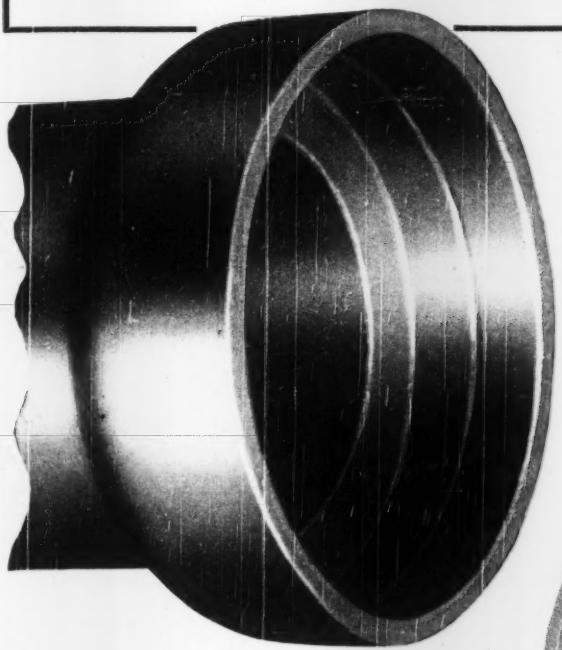
† Load (unit) Roofing. ‡ Specify. ¶ Per 100 lb. bags. ‖ 6 x 12 x 12. ** 5¼ x 8 x 11¼. †† Tax exempt. ‡‡ Sand lime. §§ 8 x 8 x 12. ¶¶ Stacked in kilns. ‖‖ Pulverized hot. ### 5 x 8 x 12 high following month. ‡‡‡ 5¼ x 8¼ x 12. ¶¶¶ Price per sack. |||| Lime not sold per ton. ##### Public works job and N.Y.C. §§§§ Price per ton. ¶¶¶¶ Public warehouse units. |||||| Brick load or ton. ‡‡‡‡ $1.00 discount. ¶¶¶¶¶ Per bbl. ||||||| 7¾ x 7¾ x 12. ‡‡‡‡‡ Special rate. §§§§§ F.o.b. Buffalo. ¶¶¶¶¶ Price lots. ||||||| Per mineral and Municipal tax exempt. ‡‡‡‡‡‡ Not used because of earthquake danger. §§§§§§ 2% discount for cash. ¶¶¶¶¶¶ Delivered in Detroit. ‖‖‖‖‖‖ 8 x 8 x 12. ###### Tax exempt. ‡‡‡‡‡‡ Price per sack. §§§§§§ Price per ton. ¶¶¶¶¶¶ Public works, job and N.Y.C. |||||||| Public warehouse units. ‖‖‖‖‖‖‖ Brick load or ton. ‡‡‡‡‡‡‡ $1.00 discount. §§§§§§§ Per bbl. ¶¶¶¶¶¶¶ 7¾ x 7¾ x 12. ‖‖‖‖‖‖‖ Special rate. ######## F.o.b. Buffalo. ‡‡‡‡‡‡‡ Price lots. §§§§§§§ Per mineral and Municipal tax exempt. ¶¶¶¶¶¶¶ Not used because of earthquake danger. |||||||| 2% discount for cash. ‖‖‖‖‖‖‖ Delivered in Detroit.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD	WHITE LEAD	READY-MIXED PAINT				ROOFING SUPPLIES Carload lots f.o.b. factory				
	Per 100 lb. in 600 lb. Approx. Drums	Per 100 lb. in 100 lb. casks Dry or in oil	Per gal. drums Graphite & Oxide	Aluminum	Farm Oxide†	Per gal. in 5 gal. cans Semi-gloss	Roll-c slate surfaced 65 lb. per sq.	Asphalt felt per 100 lb.	Tar felt per 100 lb.	Asphalt coating per gal.	Tar pitch 200 lb. bbl. per ton
Atlanta	$15.25	$26.25	$1.75	$2.70	$1.65		$2.00	$2.00	$2.00	$1.00	$36.00
Baltimore	15.50	26.00	2.45	4.10	2.90		2.50	3.94	3.94	.55	36.00
Birmingham	15.25	26.25	3.00	3.40			2.80	2.75	2.75		40.50
Boston	15.50	26.00					2.88		2.67	.70	34.00
Chicago	15.50	26.00					2.45	2.54	2.54	.54	32.00
Cincinnati	15.50	26.00	2.90	2.90			2.00	2.17		.27	
Cleveland	15.50	26.00	2.50	2.55	2.90		2.29	2.25	2.29	.30	33.00
Dallas	15.75	26.75		4.05			3.50	3.25	4.35	.36	46.00
Denver	16.00	26.50	2.61	4.38	2.48		3.00	2.20	2.20	.41	40.00
Detroit	15.50	26.00	2.45	4.30	2.90		2.00	2.18	2.18	.51	35.00
Kansas City	15.50	26.12					2.00	3.03	3.03	.274	42.50
Los Angeles	15.50	26.25	2.80	4.75	3.50		2.50	1.97		.37	
Minneapolis	15.50	26.12 28.55					2.00	2.18	2.18	.30	34.00
Montreal		22.00	1.75	4.20	3.62		1.25	3.00		.70	2.60
New York	15.50	26.00	3.45				2.50	2.41	2.41	.34	35.00
Philadelphia	15.50	26.00	2.25	3.65	2.35		2.54	2.94	2.94	.37	29.00
Pittsburgh	15.50	26.00	2.20	2.20	2.40		2.75	2.75	2.75	.37	29.00
St. Louis	15.50	26.00					2.14	2.54	2.54	.40	38.00
San Francisco	15.50	26.25	1.80	2.75	1.35		2.27			.38	
Seattle	15.50	26.50	2.31	2.97			2.25			.36	48.75

† Dehydrated. Note: Red lead is not 5% darker than white lead in oil. ‡ Red lead. § Per 100 lb. bags. ¶ Ex-factory. Charges ‖ ASTM spec. D260-41. ** Per 100 lb. square. †† Per ton. ‡‡ Price to large paint manufacturers. §§ Federal tax included. ¶¶ Not included. ‖‖ Price for 100 lb. squares. ## 5% Roofers' coating and cement. Price per gallon. *** Federal tax included. ††† Not quoted. ‡‡‡ Not used. §§§ Delivered. ¶¶¶ 2% cash discount. |||| Asphalt in 100 lb. bags. ##### Material for roofing. §§§§ Mill price. ¶¶¶¶ Per 500 lb. |||||| Minimum. ‖‖‖‖‖‖ Per ton. ######## Contractors as $1.25 less. ‡‡‡‡‡‡‡‡ Mineral surfaced. §§§§§§§§ Gallon container. ¶¶¶¶¶¶¶¶ Drums not Approximate cost per 100 lbs. ‖‖‖‖‖‖‖‖ Roofers coating and cement. Price per gallon. ********** Delivered. †††††††††† 2% cash discount. ‡‡‡‡‡‡‡‡‡‡ Asphalt in 100 lb. bags. §§§§§§§§§§ Material for roofing. ¶¶¶¶¶¶¶¶¶¶ Mill price. |||||||||| Per 500 lb. ########## Minimum. ‖‖‖‖‖‖‖‖‖‖ Per ton. ********** Contractors as $1.25 less. †††††††††† Mineral surfaced. ‡‡‡‡‡‡‡‡‡‡‡‡ Gallon container. §§§§§§§§§§§§ Drums not Approximate cost per 100 lbs. ¶¶¶¶¶¶¶¶¶¶¶¶ Roofers coating and cement. Price per gallon. |||||||||||| Delivered. ########## 2% cash discount. ********** Asphalt in 100 lb. bags. †††††††††††† Material for roofing. ‡‡‡‡‡‡‡‡‡‡‡‡‡‡ Mill price. §§§§§§§§§§§§§§ Per 500 lb. ¶¶¶¶¶¶¶¶¶¶¶¶¶¶ Minimum. ||||||||||||||

Geared to Give You ADVANTAGES EXTRAORDINARY



Universal Sewer Vitrified Clay Pipe

COMPLETE SIZE RANGE

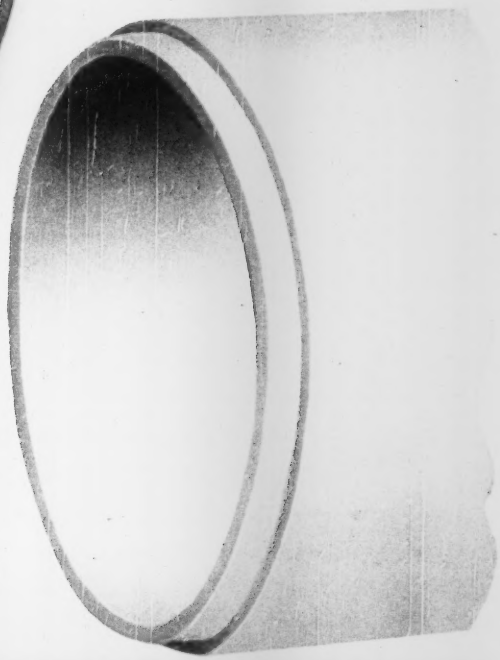
3" to 36" inclusive

FACTORIES

Uhrichsville, Ohio (2) New Philadelphia, Ohio—Palmyra, Ohio

OTHER VITRIFIED PRODUCTS

Flue Lining • Stove Pipe • Chimney Tops • Chimney Pots Wall Coping • Fire Brick • Fire Clay • Septic Tanks Segment Sewer Block • Tylox Rubber Coupling • Slipseal Sewer Joint • Meter Boxes • Aerodrane Filter Block • Ship-Lap Wall Coping



United States Concrete Pipe

COMPLETE SIZE RANGE

Machine and cast concrete pipe—6" to 120" inclusive

FACTORIES

Palmyra, Ohio—Cincinnati, Ohio—Baltimore, Md.

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BALTIMORE, MD., Hallethorpe Branch, P. O. Box 7769, Tel. Elkridge 790
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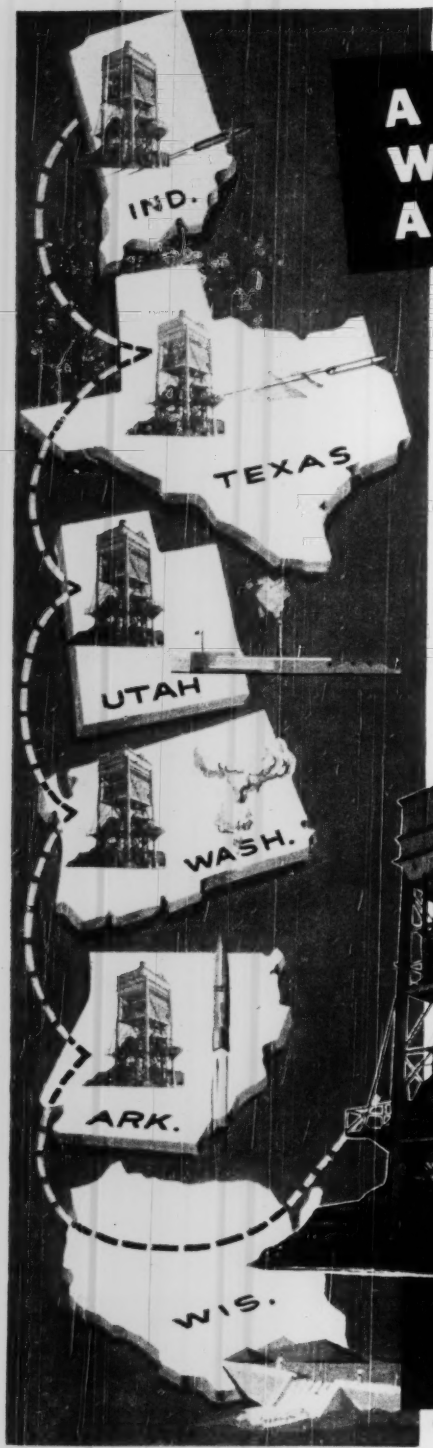

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Here's a BUTLER Central Mixing Plant with a talent for travel coupled with an unsurpassed genius for production.

Here's its itinerary and the top secret war construction for which this rugged veteran poured millions of yards of concrete.

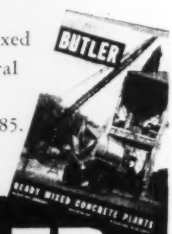
Indiana	Hoosier Ordnance Plant (shells).
Texas	Lone Star Ordnance (shells and powder).
Utah	Navy Supply Base.
Washington	Hanford Engineering Works (the atomic bomb).
Arkansas	Government Ordnance Plant (rocket powder).

Incidentally, on all these war projects it was the Kolinsky Concrete Co. of Milwaukee which was in immediate command of "Operations Concrete."

And now — far from retirement, that veteran BUTLER Central Mixing Plant is *paying* a bonus by pouring concrete for a power dam at Ladysmith, Wis.

All of which proves that BUTLER *Engineered Design* also pays a bonus far beyond expectation.

For complete descriptions of BUTLER Ready Mixed and BUTLER Central Mixing Plants write for Bulletin 185.



BUTLER BIN COMPANY

947 BLACKSTONE AVE. WAUKESHA, WISCONSIN

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

O., Youngstown and Niles—B. A. 7-11—Mahoning Valley Sanitary Dist. A., Youngstown, plans Bd. Directors, Box 65, Youngstown, Contr. 12" new I.P. pump installation in existing Meander Creek Pump Station, 2 mi. south of Niles, construct tap, furnishing, installing motor driven 5th 125 pump, 30 mgd, with motor, valves, equip. and wiring. Owner deposit $10. Consulting Engrs., Alvord, Burdick & Howson, 1 Broadway, New York, N. Y. engrs. CD 10-27-49

Kan., Russell—B. A. 7-12—City, City Clerk, construct WW system, incl. water main, 18,200 lin. ft. 6" to 12" pipe, 100 lin. ft. 16" pipe, 5 fire hydrants, etc. Plan deposit $10. CD 4-28

N. Y., Newark—B. A. 7-12—Village Bd., J. A. Pearl, City Village Hall, water supply improvements, incl. new deep well and subsurface collection system, 2 mi. 24" to 36" R.C. pipe collector sewer, 12 mi. 24" to 8" R.C. pipe separate sewers between Canandaigua Lake and existing reservoir, new treatment plant at Kirkpatrick St. and other improvements. Separate bids on reservoir and sections of existing facilities and separate tabulations of pipe materials for battery of sluice gate. Plan deposit $25. William S. Lozier Co., 155 Exchange St., Rochester engrs. CD 10-13-49

B. C., Vancouver—B. A. 7-13—Rogers, Thomson, City Clerk, City Hall, 2 mgd water purification plant, reservoir, distribution system, water pipe, incl. 30,000 lin. ft. 16" to 24" pipe. Plans deposit $100. Consulting engrs., Kennedy, Wilson & Gilbert, 1200 Dominion Bank Bldg., Toronto, Ont. engrs. CD 9-28-49

Conn., Bristol—B. A. 7-14—Water Comm., 129 Riverside Ave., existing earth dam and spillway, Shuttle Meadow Reservoir, and highway bridge appurtenant work at Bristol Reservoir, 7 miles of feeder pipe, mains and Burlington Pump, deposit $10. Metcalf & Eddy, 1136 Statler Bldg., Boston, Mass., engrs. CD 10-27-49

Tex., Baird—B. A. 7-13—City, R. D. Freeland, mayor, 300,000 g.p.d. filter plant and high pressure station, $55,000. Plans deposit $10. Forrester & Nyberg, 407 Dancigar Bldg., Fort Worth, engrs.

Ia., Grand Junction—B. A. 7-17—City, WW sys. extension, $50,000. Hoyt & Akers, 224 N. 11 St., Lincoln, Neb., engrs. CD 10-21, under E.R.

Tex., Houston—Bids Aksel—Owner "Genesis" 2622 Northwestern Ft., water lines, manholes, work in 2nd sect. Shady Park addn., $19,000.

Tex., Houston—Bids Aksel—W. C. Perkins, 702 Hart Bank Bldg., water lines, in area of last sect. Southern Oaks Addn.

LOW BIDDERS

Calif., Long Beach—City Water Dept., 215 W. Broadway, June 22, 48- and 54-in. water main from 3 Mile Junction Reservoir to Santa Fe Ave. and Artesia Blvd., thence Artesia to Santa Fe Ave. and Alondra Ave., Paramount. $671,441

Calif., Mariposa—John G. Fremont Hospital Dist., Court House, June 21, water supply system, consisting of one 100,000 gal. ground tank, tower, from C. Norman Peterson, 2822 9 St., Berkeley. $65,850

† Calif., Oceanside—U. S. Navy, 12th Naval Dist., San Diego, June 21, cement lining 20,000 lin. ft. 6" to 16" in. water mains, Camp Pendleton. Bid: Inc., 824 E. Lime Ave., Monrovia. $226,054

Ia., Dubuque—City Hall, received bids May 19, WW addns., L. B. $61,250. CD 6-2, under EB.

† Md., Camp Detrick—U. S. Govt., Dist. Army Camp Detrick, altering existing water plant at Camp Detrick, Frederick, Md., to 6- and 8-in. and 6- and 8-in. Asbestos Pipe. $59,000.

Md., Sykesville—State Dir. P. Imworth, 506 Park Ave., Baltimore, 2 mgd water treatment plant, 2 units, 8 mgd, 1 steel reinforced brick, steel, spherical plate mounted, from Allen Contractors, Inc., 204 E. Preston St., Baltimore, Zone 2. $185,964. Est. $180,000. John B. Fehr, 506 Park Ave., Baltimore, Zone 1, Eng.

Md., Towson—Baltimore Co. Court House, Zone 12, 6" water pipe, appurtenances, sewage and tank, water works, in parts of Districts 5th, 6th, 11th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, Towson, Contr. No. 231 S, extension, Baltimore. $71,458. Zones 22, 23, 24, from Les Buttery, Inc., 1013 51 Ave., Hyattsville. $68,190. Zones 11, 20, 21, from Lasch Construction Co., Hyattsville. $31,644.

O., Dayton—Comm., Montgomery Co., Court House, received bids June 19, for 16" water pipe, 6" water pipe, water tower, etc. Low B. $94,275. Will re-advertise. CD 6-1

O., Mount Gilead—City, Contr. 1, water softening plant, from Modern Welding Co., Fremont. $121,403. CD 6-6.

Okla., Ardmore—City, June 13, water supply main, from E. Side Dam, City, 24" to 20" in. to 16" in. to 12" in. to 8" in. to 6" in. to 4" in. to 2" in. to 1" in. to 1/2" in. to 1/4" in. to 1/8" in. to 1/16" in. to 1/32" in. to 1/64" in. to 1/128" in. to 1/256" in. to 1/512" in. to 1/1024" in. to 1/2048" in. to 1/4096" in. to 1/8192" in. to 1/16384" in. to 1/32768" in. to 1/65536" in. to 1/131072" in. to 1/262144" in. to 1/524288" in. to 1/1048576" in. to 1/2097152" in. to 1/4194304" in. to 1/8388608" in. to 1/16777216" in. to 1/33554432" in. to 1/67108864" in. to 1/134217728" in. to 1/268435456" in. to 1/536870912" in. to 1/1073741824" in. to 1/2147483648" in. to 1/4294967296" in. to 1/8589934592" in. to 1/17179869184" in. to 1/34359738368" in. to 1/68719476736" in. to 1/137438953472" in. to 1/274877906944" in. to 1/549755813888" in. to 1/1099511627776" in. to 1/2199023255552" in. to 1/4398046511104" in. to 1/8796093022208" in. to 1/17592186044416" in. to 1/35184372088832" in. to 1/70368744177664" in. to 1/140737488355328" in. to 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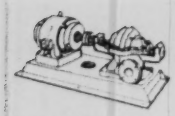
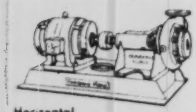
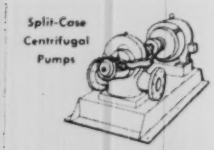

Two-Stage Centrifugal Pumps


Horizontal Sewage and Trash Pumps


Split-Case Centrifugal Pumps

Vertical Propeller Pumps

for Pumps...
THAT DELIVER
plus performance
lasting dependability
unsurpassed economy

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DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES
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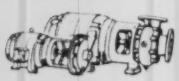
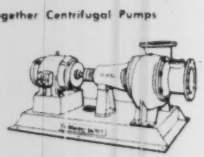
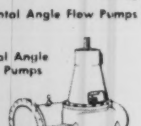

Builtogether Centrifugal Pumps

Vertical Close-Coupled Sewage and Trash Pumps


Horizontal Angle Flow Pumps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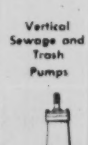
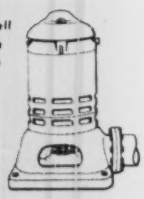

Vertical Sewage and Trash Pumps

Deep Well Turbine Pumps



...ing & Heating Co., 1215 S.W. 5 St., Portland, $105,096. CD 6/24.

Tenn.—Memphis—City, City Hall, Sect. 3, Harrison Creek sewers, from J. H. Barr, 2484 Southern Ave., $79,747.

Wash.—Seattle—Lake City Sewer Dist., c/o Parker & Hall, engrs., Smith Tower, Zone 4, 33,320 lf, 8-10 in. sewer; Zone 7, and 17,760 lf, 8-10, 15 in. sewer, Contr. Frank Mat Maiolpino, 1901 23 Ave., S., $152,222 and $71,436 respectively. Bids 6/19. CD 6/21.

CONTRACTS AWARDED

Calif., Sacramento—Sacramento Co., Court House, sanitary sewerage sys. in Country Club Estates Subdivision 2, to A. Teichert & Son, Inc., Box 1113, Sacramento, $60,947. Bids 6/21.

Mass., Lenox—PLANT—Town, Bd. Selectmen, Town Hall, brick, concrete sewage disposal plant, 1,300 lf, 10 in. pvt. tile sewer, and treatment facilities, to George E. Enwright, 14 Bolton St., Pittsfield, $50,000. Whitman & Howard, 89 Broad St., Boston, engrs. Bids 6/8.

Okla.—Oklahoma City—City, City Hall, sanitary sewer sub main, Contr. C. to M. A. Hawkes & Co., Highway Bldg., Zone 3, $241,278. Est. $249,Ken. Awarded to 2d lowest bidder, Walker St., to Michael A. Tarbutton & Son, Cellular St., Providence. Approx. $200,000. CD 9/25.

Tex., Houston—Mfrs. Improvement Dist. No. 8—Sanitary and storm sewers, labor basis, $62,000. Henry C. Johnson, 5717 Kirby Dr., engr.

Tex., Lubbock—Urban Development Corp., c/o Sam Lemons, Lubbock, sanitary sewers, own force. Approx. $60,000. Foxwell, Smith & Cooper, 1314 Avenue J, Lubbock, engrs.

Tex., Odessa—City, sanitary sewers, own forces, $90,000. Joe F. Walker, Natcol Bldg., Wichita Falls, engr. CD 4/28/49.

N. S.—Halifax—Municipality, sewers on Hartlen, on Fenwick and Windsor Sts., day labor, $54,324. F. C. Wood, City Hall, city engr. CD 7/29/46.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

July 11
Wisconsin

July 14
Kansas

July 19
California

Ariz.—Yuma—Yuma Co., Yuma Co. Bridge, 1,000 lf, 2 lanes, 24 ft. wide, on Gila River, 1 mi. south of Yuma, Contr. C. to Ralph Hoffman, Box 1, Yuma, $1,000,000. Bids 6/20.

N. Y.—New York—B.A. 7-22—Dist. E, Wash. Municipal Bldg., Zone 7, Contr. to superstructure of sea south unit and reconstructing southend of Eastern Blvd. over Bronx Kill, Bronx, Boro. Plans deposit $25. Extended date. CD 6/12.

† Alaska—B.A. 7-17—Alaska Road Comm., Juneau, Bridge with 7 3-span spans on concrete substructs and steel girder over Savage River, $125,000. Plans deposit $10.

N. Y.—Ossining—B.A. 7-18—Pleasant Village Trustees, Harbert J. Thomas, village clk., strengthening, repairing and approach spans, Secor Rd. Plans deposit $5.

LOW BIDDERS

Illinois—State Div. Hyts., Springfield, June 27, substructure, paved approaches and steel structural steel for railroad underpass on Rte. Route 2 over Rock Island Co., from Centerville Co., 2611 Rockingham Rd., Davenport, Iowa, Contr. Housing Structures Co., 1844 13 St., Greeley, $278,231. Hoisting structures, 2 Ton Capacity, Type A-Frame, $6,220 N. Wacker Dr., Chicago 1, Zone 6, $67,750. CD 5/9.

Maryland—State Rds. Comm., Baltimore, June 20, 74 ft. span dual superstructures, steel beam bridge 37 ft. wide, Line Washington National Pike over Bennett Creek, Frederick Co., Contr. J. 429, Sec. 15, Frederick Co., from Camden Constr. Co., 1301 Towson St., Baltimore, $128,695. Wm. F. Cuttle, Jr., 107 E. Lexington, Md., engr. CD 6/8.

CONTRACTS AWARDED

Maine—State Hy. Comm., Augusta, Alfred Road Crossing, F. A. Proj. Fa. 368 (2), Biddeford to Cor. & Dennis Co., Waterville, $109,256; overhead bridge, F. A. Secondary Proj. 11 (1), Lauzanne Co. P. T. & K. Co., Pittsfield, $52,529. CD 6/16.

Washington—State Hy. Dpt., Olympia, rein. con. girder bridge over Hoko River, incl. grading, surf. approaches, 0.197 mi., F. A. S. 2211 (1), Clallam Co., to C. A. Buchanan Co., Box 548, W. 48 St., Seattle, $74,207. Rein. con. bridges and bit. surf. on plant mix type F, 0.83 mi., Secondary State Hy. 1-C, Fredonia to Edison, Skagit Co., to C. V. Wilder, Bellingham, $63,399. Conc. slab grade separation bridge at west approach, incl. surf. east and west approaches to Columbia River Bridge, F. A. P. U-208-1 (3), U-028-2 (2), Unit 2 and U-030-1 (2), Unit 2, Crelan and Douglas Counties, to Goodfellow Bros., Wenatchee, $233,340. Grand total $378,946. Bids 6/20.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

July 11
Wisconsin

July 13
Kansas

July 14
Kansas
Pennsylvania

July 17
Nova Scotia

July 19
California

July 20
California

July 21
Pennsylvania
Tennessee

July 23
Louisiana

July 26
Louisiana

Ill., Chicago—B.A. 7-11—City, City Hall, Zone 2, b. conc. & hmadm. St., from Ogden Ave. to West Roosevelt Rd., $300,000. Plans deposit $25. Dpt. Streets & Electricity, City Hall, engrs. CD 3/21.

Ont., Ottawa—B.A. 7-12—J. D. Mc Carthy, secy., c/o Canadian Commercial Corp., 70 Lyon St., Ottawa, repairing asph. surf., R.C.A.F. Station, Rockcliffe. Tender No. G.19-R3-15. Approx. $55,000. Plans deposit $25.

† Alaska, Anchorage—B.A. 7/20—Dpt. Interior, Div. Territories and Island Possessions, Community Bldg., Juneau, street improv., $113,460. Plans deposit $10.

Tex., Houston—Bids Asked—Oswald Gerrard, 2522 Wordsworth St., asph. paved streets, concrete curbs and gutters, in 2nd sect., Shady Park addn. $65,000.

Tex., Houston—Bids Asked—W. C. Perkins, 701 Gulf Bank Bldg., construction and paving streets in area of 2nd ward, Southern Oaks addn. $65,000.

Tex., Houston—Bids Asked—P. B. Trawick, Campbell Bldg., street constr. and asph. paving, $60,000. Southwestern Eng. Co., M. & M. Bldg., engr.

LOW BIDDERS

Alabama—State Hy. Dpt., Montgomery, June 23, Bit. Conc. in Fitzpatrick to Mitchell, FAS-187 (3), Butler Co., from Bennett Constr. Co., Montgomery, $77,401. Conc. bit. 6.59 mi. Miner-Clay Co. line-Randolph Co. line, from A. G. Snow Constr. Co., Birmingham, $59,425. Bit. 3.55 mi. between Ligon's and Cordova, FAS-472 (1), Walker Co., from Clyde O. Mitchell, 104 N. 44 St., Birmingham, $76,626. CD 6/12.

California—State Div. Hys., Sacramento, June 21, imported base material, apply seal coat 4 mi. between Style Rt. 1 at Old Hopland and Largo, Mendocino Co., from John Bosman & Son, 2344 F St., Eureka, $83,511. Clean exs. surf., install traffic signals, Hy. 99 and Rte. 1 connection, Los Angeles, between Hyperion and Sawtelle, Contra Costa Co., from C. R. Armstrong, 400 Central St., El Cerrito, $167,295. Conc. 1.9 mi. between The Willows and 4 mi. east, San Diego Co., from Clyde W. Wood & Sons, P. O. Box 620, North Hollywood, $420,317. Widen pavement with borders of treated rock base, place asph. conc. surf. on existing pavement and new base and bit. to shoulders 9.5 mi. between city of Oakdale and town of Waterford, Stanislaus Co., from United Concrete Pipe Corp., Box 425, Baldwin Park, $92,641. Graded hy., plant mix surf. at intersection of new State Hy. Rt. 6 and 99 connections on Park Blvd., and Morgan Blvd. extension between 11 St. and existing State Hy. Rte. 6, Colo Co., from Chas. Maddux & Harry Bros., 220 Market St., San Francisco, $253,315. CD 6/29.

Calif., Richmond—City, City Hall, June 19, widen Pumire Civic Center Sts., from Lee J. Immell, 3030 San Pablo Ave., San Pablo, $66,232.

Calif., San Francisco—Dpt. P. Wks., City Hall, June 22, improv. resurf., Bush St., etc., Spec. 720,730, from Fay Improv. Co., 760 Market St., $121,731.

Colorado—State Hy. Dpt., Denver, June 8, grading, surf., 2.422 mi. State Hy. between Muddy Pass and Waldent, Colo. Proj. No. S 0115 (3), Jackson Co., from Carl Hall, 1844 13 St., Greeley, $122,911. Est. $126,885. CD 6/1.

Colorado—State Hy. Dpt., Denver, June 15, grav. surf. on improved subgrade, 9.1061 mi. State Hy. 34 from Wray to Nebraska State Line, Colo. Proj. No. F 011 (1), Yuma Co., and 7.1614 mi. State Hy. 14 between Sterling and Stoneham, Colo. Proj. No. S 0024 (2), Logan Co., from Peter Kiewit Sons Co., 1450 S. Colo. Blvd., Denver, $123,218. Est. $169,210. CD 6/26.

Colorado—State Hy. Dpt., Denver, June 21, grading, structures 14.431 mi. proposed relocation State Hy. 10 between Durango and Hesperus, Colo., Proj. F022-1 (4), La Plata Co., from Ed Lively & Ed Lindsay, Durango, $225,430. Est. $277,686. CD 6/13.

Colo.—Denver—City and Denver Co., City & County Bldg., June 20, street improv., in Dist. 167, from Martinson Constr. Co., 5400 Colorado Blvd., $216,934. Est. $416,400. CD 6/14.

Iowa—State Hy. Comm., Ames, June 20, maintenance hot resurf., 87.48 mi., Mi 14, Div. 4, State Co., from Iowa Road Bldg. Co., Fairmont, Minn., $97,476. Div. 8, from Richards Constr. Co., Washington, $71,272. CD 6/13.

Md.—Baltimore—City, Bureau Hys., June 21, Contr. 1063, street resurf., from Camden Constr. Co., 1301 Towson St., $79,063. Contr. 1067, street repaving, from Trinity Bldg. & Constr. Co., 4420 E. Eager St., $75,852. Contr. 1068, asph. resurf. street, from P. Flanigan & Son, 2405 Loch Raven Blvd., $141,707. CD 6/15.

▲ Minnesota—State Hy. Dpt., St. Paul, June 16, grading, 8.2 mi. between Montgomery and New Prague, Lesser Co., from Fielding & Shepley,

1258 Bhon Ave., St. Paul, $500,000; grading, gravel base, etc., incl. concrete box culverts and widen bridge 2581, from C. L. Nelson & Co., and Herbison Constr. Co., both Brainerd, $537,135; gravel subbase, crushed rock base, etc., 10.7 mi. between Hayfield and Blooming Prairie, Dodge Co., from J. V. Greason, 27 St. and Louisiana Ave., St. Louis Park, $155,441. CD 6/5.

▲ New Jersey—State Hy. Dpt., Trenton, June 26, grading 2.514 mi. Route 1 Parkway Sects. 5a and 9a from Route 28 (North Ave.) to Rotenort, Union Twps. of Cranford and Union Boro. of Kenilworth. Fed. Proj. U-188 (14), Union Co., and constr. 1.522 mi. Route 25 Sect. 10, Yardville relocation, Bordentown and Hamilton Twps. Fed. Proj. F 64 (6), Burlington, and Mercer Counties, from J. C. Chapman & Son, Inc., 1244 N. Broad St., Hillside, $732,748 and $1,308,125, respectively; grading 0.915 mi. Palisades Interstate Parkway New Jersey Sects. 2D and 2B from Station 165 to join 0 to Station 214 plus 50 north of Clinton Ave., Boros of Englewood Cliffs and Tenafly, Bergen Co., from Circle Constr. Corp., 1 Virginia Ave., N. White Plains, N. Y., $295,686. Constr. 1.24± mi. Route 2e extension Sect. 2A from Pennsylvania R. R., Belvidere and Delaware Branch, to Mulberry St., Camden, incl. grading, drainage city of Trenton, Fed. Proj. U-140 (4), Mercer Co., from Asphalt Constr. Co., 1601 McKean St., Phila., Pa., $2,087,298. Constr. 1.209 mi. Route 2e Extension Sect. 1C from Conover's Alley to Perry St., incl. cross connection Perry St. from Front Ave. to Stockton St. Paving, city of Trenton, Fed. Proj. U-140 (4), Mercer Co., from Figueroa Contg. Co., 12 Central Ave., Newark, $770,813. Constr. 14.4 mi. Route 6 Sects. 23A and 22B from Little Falls Rd. to Route 23 Twps. Clifton and Wayne, Fed. Proj. F-1198 (12), Essex and Passaic Counties, from Union Bldg. & Constr. Co., 681 Main Ave., Passaic, $1,069,676. Paving 0.731 mi. Route 1 Sect. 15 from Berkeley to Federal Rd., Boro. of Paulsboro and Twps. of Greenwich, East Greenwich and Logan, Fed. Proj. F 122 (8), Gloucester Co., from Ayers Contg. Co., 113 Central Ave., Westfield, $1,277,095. CD 6/7.

N. J., Woodbridge—Woodbridge Twp., Woodbridge, repairing streets, from Bonsite & Rutkin, 251 Watchung Ave., Kenilworth, $61,410.

Wash., Olympia—Thurston Co. Co. Courthouse, resurface streets, from J. F. Forbes Co., 1120 Olympia St., $59,586. L. Counter Olympia, engineer.

† Wyoming—Bureau Public Roads, Dpt. Commerce, 264 New Customhouse, Denver, Colo., June 14, grading base, surf. 8.386 mi. Moran-Yellowstone Approach Road Proj. Sect. D, Dist. 2, Teton Co., from J. J. Doolard, 5015 E. 17 Ave., Denver, Colo., $340,712.

CONTRACTS AWARDED

Arizona—State Hy. Dpt., Phoenix, realignment 4¼ mi. Tucson-Nogales Hy., Pima Co., to Pioneer Construction, E. 39 St., Tucson, $241,965. Preparation 11.2 mi. Ash Fork-Prescott Hy., Yavapai Co., to Sundt Contg. Co., 2701 S. 18 Ave., Phoenix, $514,440. ***Alig mi. Hy. between Cornville and Page Springs, Yavapai Co., to R. R. Turner & Sons, 753 N. 14 Ave., Phoenix, $104,471. Grand total $1,010,876. Awarded 6-19. W. C. Letellier, engr.

† California—Bureau Reclamation, Dpt. Interior, Bids 1-A, Denver Federal Center, Denver, Colo., grading, paving roads, constr. curbs, gutters and sidewalks at Shasta Dam and power plant, Central Valley Proj., Spec. RO-103 (Region 2), to Fredrickson & Watson Constr. Co., 873 51 Ave., Oakland, Calif., $249,635. Bids 6-14.

California—State Div. Hys., Sacramento, 0.2 mile with plant mix, on bridge 4-B mi. between Fairmont Underpass and 65 Parkland Ave., Oakdale, Stanislaus County, to Broadway Sales, Angeles, $731,824. Bids 6-14. CD 6/21, under LB.

La., New Orleans—City, street paving, Proj. 14.288 to 14.291, inclusive, for A. N. Gentilly, Mayor, Blanche Bldg., $121,328. Proj. 14.252, 14.293, 14.294 and 14.295, to Bob Bros., 2300 Cypress St., $129,481. Proj. 14.292, 14.297 and 14.298, to Lang Co., 2000 Poydras St., $105,372. Grand total $406,180. Bids 6-16.

Maryland—State Rds. Comm., C. R. Pease, engr., Baltimore, grading, surf. treat., structures and concrete, several relocations, paving, resurfacing on McCool Rd., U. S. 220, beginning at southern limits of Cresaptown and extending southwesterly towards McCool, Contr. A. Aiello & Co., Cumberland, Contg. Co., Box 507, Cumberland, $524,299. Bids 5-2, awarded 6-23. Wm. C. Childs, jr., 108 E. Lexington St., Baltimore, etc. engr. CD 5-8, under LB.

▲ Minnesota—State Hy. Dpt., St. Paul, grading, paving 12.4 mi. between St. James and Madelia, Watonwan and Woodland Counties, Co. Proj. 18 Aid Proj. 69, $649,239. Improvement with bituminous surface, concrete bridges 3712 and 3713, City Court to Hellett, Constr. Co., Crosby, $488,265. Grading 6.4 mi. between Lake Itasca P. O. and Trunk Hy. 71, Clearwater and Becker Counties to Red Wing Constr. Co., Rochester, $116,008. Gravel base, plant mixed bit. surf. 10.01 mi. between Junction Trunk Hy. 23 and east limits of Fairmont, to Ole Bakke & Sons, Fairmont, $102,082. Plant mixed bit. surf., road side development 4.2 mi. between St. Louis River and west limits of Duluth and Proctor, St. Louis Co., to Meagrey Bros., St. Cloud, $257,947. Sand-gravel base, 8.5 sta. (3.1 mi. Maintenance Dist. 2, to Northern Constructors, Inc., Buffalo, $51,795. Grand total $1,565,336. CD 6/6.

Mo., Kansas City—Jackson Co., Court House, Zone 6, editing, 70,000 cu. yards, cash forces, $273,000. CD 11/10/47.

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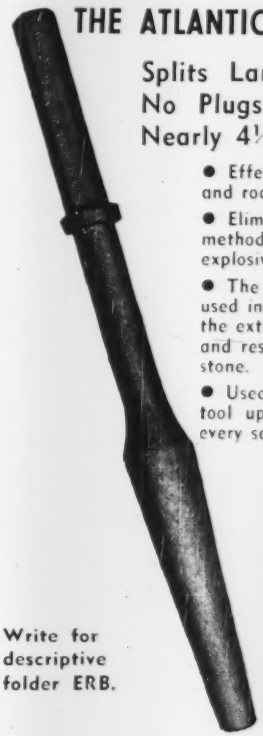

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BUCYRUS, OHIO

Nevada—State Hy. Dept., Carson City. Wk. on highway improvement on U.S. 91 from Commercial St. to Lamoille Rds., Elko Co., to Young & Smith Constr. Co., Beason Bldg., Salt Lake City, Utah, $111,917. Bids 6-22. CD 6/14.

O., Warren—Const. Treanbull Co., Warren, surf. to #4 mi. roads, to Bower & Taylor Co., Farmdale, $50,116. Awarded 6-19.

† Oklahoma—U. S. Eng., P. O. Box 61, Tulsa, access road to the Eufaula Dam site on Verdigris River, Rogers Co., to Sherwood Constr. Co., Independence, Kan., $63,911. Est. $56,424. Awarded 6-25.

Okla., Oklahoma City—City, City Hall, asph. pavement Dist. 1120, to Metropolitan Paving Co., 300 S. Ieard, Dist. St., Zone 4, $74,223. Est. $79,745. Awarded 6-20. H. E. Chase, Municipal Bldg., engr. CD 5/15.

Ore., Albany—City, City Hall, asph. surf. streets, to Warren Northwest, Inc., 9860 N. E. Hancock St., Portland, $55,435. Harold W. Poling, city engr. Bids 6-19.

Pennsylvania—State Hy. Dept., Harrisburg, widn. pavement with 6" conc., pavement 22 ft. and variable in width, replacement of portion existing pavements, sidewalks and curbs, and for misc. work, 18.446 ft. L. R. 110, 10, Al. 1, R. 51, from point in Pleasant Hills Boro. to point in Whitehall Boro., Allegheny Co., to Allegheny Asphalt & Paving Co., Inc., 801 Bingham St., Pittsburgh, Zone 3, $699,954. Bids 6/9, awarded 6-20. CD 6/13, under LB.

Tex., Houston—Miles Strickland, 2nd Union Natl. Bank Bldg., const. conc. and asph. paving, Culver builds, Agnew, $65,000. Henry L. Johnson, 5717 Kirby Dr., engr.

Tex., Lubbock—Urban Development Corp., c/o Sam Lemon, Lubbock, street, constr. and asph. paving, own forces. Approx. $70,000. Parkhill, Smith & Cooper, 1411 Avenue J, engrs.

Tex., Odessa—City, asph. street paving, repairing, impr., own forces, $110,000. Joe E. Ward, Narcel Bldg., White Falls, engr.

† Washington—Bureau Public Rds., Dept. Commerce, Morgan Bldg., Portland, Ore., surf., oiling 12.5 mi., Randle-Cayuse Hy., Lewis Co., to N. A. Degerstrom, Inc., 2737 S. E. 21st Court, Portland, Ore., $345,561. Bids 6-22. CD 6/14.

EARTHWORK, WATERWAYS

BIDS ASKED

† Kansas—B. A. 7-11—U. S. Eng., 601 Davidson Bldg., Kansas City, Jr. Mo., approx. 11,150 lin. ft. dike and dike revetment repair, Kennison to Bee Creek Bends, Atchison, CIVENG 23-128-50-1167.

Minn., Wisdom—B. A. 7-11—Cottonwood Co., F. J. Carbine, aud., County Ditch 18, about 150,778 cu. yd. excav., furnish, install 2x4 in. to 4x12 in. metal culvert, 16,212 sq. ft. to 14 in. tile, etc., $36,594.

† Maryland—B. A. On Or About 7-12—U. S. Eng., 24 St. and Maryland Ave., P.O. Box 1715, Baltimore, Zone 3, dredging at Duck Point Cove, on east shore of Fox Creek, approx. 2½ mi. above mouth Dorchester Co., and maintenance dredging at Fishing Creek, on west side of Chesapeake Bay at Chesapeake Beach, 26 mi. south of Annapolis, Calvert Co., CIVENG 18-020-50-44.

† Iowa—B. A. 7-12—U. S. Soil Conservation Service, 414 N. Pinkington Ave., Milwaukee, Wis., flood control work on Somonauk Minor Watershed in Little Sioux Basin, near Quimby.

Louisiana—B. A. 7-12—Livingston Parish Police Jury, Livingston, 431,100 cu. yd. channel excav.

La., Monroe—B. A. 7-12—Ouachita Parish Police Jury, Monroe, approx. 955,100 cu. yd. channel excav., etc.

Que., Petit Cap—B. A. 7-12—Acting Serv. Dist. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater extens., Approx. $71,000. Plans deposit $20. R. Blais, c/o owner, engr.

▲ Michigan—B. A. 7-11—State Hy. Dept., Lansing, marine excav. and constr. ferry slip at Mackinaw City, Chebogan Co., ferry dock at St. Ignace, Mackinac Co., $70,000. Deposit $5.

† Missouri—B. A. 7-11—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., 1,045 lin. ft. dike and revetment, Crooked River to Baker Bends, Wrigley, CIVENG 23-058-50-1167.

† Washington—B. A. 7-11—Bureau Reclamation, Dept. Interior, Yakima, rehabilitation Kachess dam outlet works and spillway channel, dike, Yakima Proj., Spec. R1 86, Region 11, Extended state L. N. McClellan Bldg., I. A. Denver Federal Center, Denver, Colo., engr.

† Louisiana—B. A. 7-14—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, reservation bids, appurtenances, for Calliaseo Lock, Calliaseo Parish, Inv. 50-744. CD 4-11, under LB.

LOW BIDDERS

California—State Div. Water Resources, P. Wks. Bldg., Sacramento, June 21—Jenny Street Dam at Solano State Home, Sonoma Co., from Sw. Engineering, 1710 W. Olympic Blvd., Los Angeles, $72,303. C. F.

† Calif., Fort Ord—U. S. Eng., 180 New Montgomery St., San Francisco, June 20, slope protection at Soldiers Club, Spec. 14,704-50-146, from Granite Constr. Co., Box 900, Watsonville, $126,745.

† Colorado—U. S. Eng., 700 Railway Exchange Bldg., Denver, June 13, constr. Cherry Creek Reservoir for flood control, Cherry Creek Dam and Reservoir Proj., Spec. 50-147, to Granite Constructors, 925 W. 9th Ave., Denver, $146,119.

† Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, June 14, approx. 2,300 lin. ft. standard board revetment, Red River, Rapides Parish, CIVENG 16-047-50-282, from Hough-Gregur & Co., Inc., 320 N. 4 St., St. Louis, Mo., $108,375. CD 5-31.

† Louisiana—U. S. Eng., Box 60, Vicksburg, Miss., June 20, approx. 314,000 cu. yd. earthwork, placing approx. 450 cu. yd. grav. surf., installing 244 lin. ft. 24 in. and 30 in. culverts on right bank Ouachita River, Ouachita Parish, Inv. 1-105, from Burns & Swilley, Inc., Bossier City, $54,644. CD 4-6.

Md., Baltimore—City, Bureau Harbors, foot of Broadway, June 21, harbor dredging Patapsco River and tributaries, from Arundel Corp., Pier 2 Pratt St., $86,240. CD 6-28.

† Oregon—U. S. Eng., 628 Pittock Block, Portland, Zone 3, received no bids June 22 for drilling, casing, developing water supply well on vicinity of government housing area, Lookout Point Reservoir, CIVENG 35-326-50-168, Lane Co. CD 5/3.

† Washington—U. S. Eng., 4735 E. Marginal Sq., Seattle, Zone 4, June 23, right bank impvs., Mud Mountain Dam, Enumclaw, Inv. 50-80, from M. F. Butler, 3419 13 Ave. S. W., Seattle, $591,280. Est. $336,877.

▲† Wyoming—Bureau Reclamation, Dpt. Interior, Rock Springs, June 26, constr. Big Sandy Dam and Dike, Eden Proj., on Big Sandy Creek, about 14 mi. north of Eden, Green River, Sweetwater Co., Spec. 3072, from S. J. Groves & Sons Co., 833 Wesley Temple Bldg., Minneapolis, Minn., $1,011,773. CD 6/5.

CONTRACTS AWARDED

Calif., Martinez—Contra Costa Co., Hall of Records, reinforced retaining wall on Arlington Ave. in Kensington Dist., to E. H. Peterson & Son, 5619 Dam Rd., Richmond, $33,681. Awarded 6-19. Jos. W. Barkley, Hall of Records, Martinez, engr.

† Missouri—U. S. Eng., P. O. Box 97, Memphis, Zone 1, Tenn., placing approx. 1,060,000 cu. yd. earthwork, St. Francis Levee and Drainage Dist., Mississippi and New Madrid Counties, CIVENG 40-041-50-1163, to H. N. Rogers & Sons Co., 62 S. Front St., Memphis, Tenn., $359,998. Bids 6-16. CD 5/10.

† Oregon—U. S. Eng., Pittock Block, Portland, 1,800 lin. ft. pile timber and stone dike at westerly end of sand island, Baker Bay, Columbia River, CIVENG 35-020-50-587, to General Constr. Co., 4800 N. Front St., Portland, $77,410. Est. $75,871. Bids 6-20. CD 5/24.

Tex., Lubbock—Urban Development Corp., c/o Sam Lemon, Lubbock, earthwork, open drainage, town ditches, $42,000. Parkhill, Smith & Cooper, 1411 Avenue J, consult. engrs.

AIRPORTS

BIDS ASKED

Tex., San Antonio—AIRPORT IMPRVS.—B. A. 7-13—City, City Hall, Military Plaza, airport impvs., grading, drainage, paving runways, taxiways, aprons, $415,000. Frank E. Pfeuffer, 115 W. Peddin St., engr. CD 3-13.

† Ala., Montgomery—LIGHTING SYSTEM—B. A. About 7-14—U. S. Eng., 230 Grant St., Mobile, rehab., constr. addnl. facilities for airfield lighting sys. at Maxwell Air Force Base, Serial No. Eng 01-018-50-104.

O., Akron—RAMP, etc.—B. A. 7/14—Comm., Summit Co., Courthouse, constr. conc. ramp, sewage treatment plant and related work at Akron Canton Airport. Plans deposit $10. CD 1/9/45.

† Miss., Vicksburg—HANGAR—B. A. 7-18—U. S. Eng., P. O. Box 60, steel M. W. C. hangar, inc. concrete apron and taxiway, at municipal airport, west side of Hy. 61, approx. 8 mi. south of here, CIVENG 23-058-50-1167.

† Wash., Richland—AIRPORT CONTROL BLDG.—B. A. 7-14—Atomic Energy Comm., Hanford Operations Office, P. O. Box 550, Richland, 1-story masonry airport control bldg., with structural steel observation and control tower, and 42x90 ft. rein. conc. or masonry 1-story records service center.

LOW BIDDERS

† Calif., Hamilton Air Force Base, RUNWAY—U. S. Eng., 180 New Montgomery St., San Francisco, June 22, runways rehabilitation, Marin Co., spec. 04-203-50-116, from Chas. H. Harney, Berry St., San Francisco, Schedules (2), $422,747. (2) $467,022. CD 6/14.

La., New Orleans—AIRPORT IMPRVS., New Orleans Arpt. & Bd. Comm., International Airport, Kenner, June 20, from Bob Ross Constr. Co., 2400 Cypress St., general contract airport impvs., Item 7-B, $274,218, Item 7-A, $223,139, Pump House, Item 1, $71,000, from Rockwood Sprinkler Corp., Box 30, Tchoupitoulas St., sprinkler system, administration bldg. and hangar, $75,225.

† Tex., Corpus Christi—AIRFIELD PAVING—U. S. Govt. Office in Charge of Construction, Bldg. 14, Naval Air Station, Corpus Christi, rejected bids June 16, are held apart awaiting at Air Station and Cabaniss Field, B. $206,116. CD 6-21.

† Tex., Corpus Christi—PAVING—U. S. Govt. Office in Charge of Construction, Bldg. 14, Naval Air Station, Corpus Christi, June 23, cellche base hot asph. surf., access route connecting landing field with seaplane ramp area from Chesterfield Constr. Co., 1420 Ayers St., $50,508.

CONTRACTS AWARDED

† Wis., Milwaukee—HANGAR—National Guard Armory, Camp Douglas, 2 wing 72x116 ft., 43x43 ft. garage, National Guard Bureau, Attn. of General Mitchell Field, in Lake, to Roland H. Becker Inc., Elm Grove, $382,764. Bids 6-21, CD 6-1, tactical air direction center—Forward at General Mitchell Field, in Lake, to Stack Constr. Co., 3303 S. 20 St., Zone 15, $182,000. Bids 6-16.

LATIN AMERICA

Brazil, Rio de Janeiro—Dpt. of State, U. S. Embassy, Rio de Janeiro, U. S. Embassy Bldg., construction will be handled by four Brazilian Contractors: Gracas-Gaore & Cia. Ltda. as general contractor; Empresa Brasileira de Eigenharia, S. A., plumbing and electrical work; Elevadores Otis S. A., elevators, and General Electric S. A., air conditioning. CD 7/3.

PUBLIC BUILDINGS

BIDS ASKED

Mass., Wormborough—SCHOOL—B. A. 7/11—Town, Supt. Schools, Northborough, 2 story, brunt, 12-classroom school. Plans deposit $50. Clinton F. Goodwin, 25 Washington Square, Haverhill, archt. 20/1/48.

Md., Elkton—SCHOOL—B.A. 7/11—Cecil Co. Ed. Educ., Court House, 1 story, brick, stone, concrete, steel, irregular dimensions, approx. 450,000 cu. ft. Junior-Senior High School addn., $450,000. Plans deposit $50. Finney, Wolcott & Assoc., 320 W. 24 St., Baltimore, archts. Jas. K. Wolford, 244 N. Charles St., mech. engr. Frank Kann Jr., 3006 Iona Terrace, struct. engr. CD 1-6.

Minn., Crystal Bay—SCHOOL—B.A. 7/11—Independent Consolidated School Dist. 11, Winnifred Dyste, clk., Junior-Senior High School, $700,000. Plans deposit $20, general contract $15, plmbg.-htg. $10, electrical work, G. Shiffler Backstrom & Cutler, 17 W. Franklin Ave., Minneapolis, archts. CD 5/9, under Minn. conv. Lake.

Minn., Mankato—DORMITORY—B.A. 7/11—State Dept., Admin., P. T. Peterson, dir. Purchases, 19 State Capitol, St. Paul, men's dormitory at State Teachers College, $700,000. Plans deposit $10. E. H. Schmidt & Co., Mankato, archts. CD 7/11.

N. Y., New York—HOUSING—B.A. 7/11—New York City Housing Auth., 63 Park Row, Zone 7, tdns. and general constr., heating and ventilating, electrical work, plumbing for St. Nicholas Houses (Proj. No. 9-10-Sect. 1), Bldgs. A, 3 and 4, and area bounded generally by 7 Ave., W. 128 St., 8 Ave., and W. 127 St. Plans deposit $75.

Wis., La Crosse—RESIDENCE HALL—B.A. 7/11—Bd. Regents Normal Schools, Madison, 2 story, brick, reinf.-con., residence hall, $325,000. Plans deposit $25. Boyum, Schubert & Sorenson, La Crosse, archts. R. C. Kirchoff, Madison, state archt. CD 12/6/45.

Wis., River Falls—RESIDENCE HALL—B.A. 7/11—Bd. Regents, Normal Schools, Madison, 2 story, reinf.-con., brick, residence hall, approx. $325,000. Plans deposit $25. Boyum, Schubert & Sorenson, La Crosse, archts. R. C. Kirchoff, Madison, state archt. CD 12/19.

Conn., Newton—LAUNDRY—B.A. 7/12—State, Raymond Thatcher, comptroller, 114 State Capitol, Hartford, laundry addn., expansion facilities, Proj. B/A 469, Fairfield State Hospital.

La., Monroe—HOUSING—B.A. 7/12, Monroe Housing Auth., VA Hotel Bldg., 52 housing units and administration bldg., Proj. LA 6-1 and LA 6-2, 52-Plans deposit $50. CD 12-21-49.

N. Y., Babylon—STORAGE—B.A. 7/12—Bureau Contracts & Accounts, Albany, storage bldg. for Dist. Engr. Dept., $35,000.

▲N. Y., Newton Falls—SCHOOL etc.—B. A. 7/12—Bd. Educ., Newton Falls, Clifton Fine Central School and bus garage, $1,302,000. Plans deposit $10. Ferguson, Benedict, Ryan & Sayer, 660 Madison Ave., New York, archts.

N. Y., New York—HOSPITAL—B.A. 7/12, Bureau Contracts & Accounts, Albany, rehabilitation main hospital, Ward's Island. Plans deposit $10. CD 7-24-46.

O., Canton—HOSPITAL—B.A. 7/13—Comrs. Stark Co., Canton, two 4 story wing addns. to Wally Stark Tuberculosis Hospital, $1,000,000. Plans deposit $10. Harry E. Day, archt.

Pa., Spring City—PATIENTS and LAUNDRY—B.A. 7/12—General State Auth., 18 and Herr Sts., Harrisburg, general constr., heating, plumbing and electrical, tubercular patients bldg. at Pennhurst State School, $600,000. Douglas M. Blum, 24 S. Main St., Phoenixville, archt., laundry bldg. addn. $250,000. Baader, Young & Schaffer, 1500 Walnut St., Phila., Zone 2, archts. A. E. Jones, c/o owner. Plans deposit $10 each. CD 4-27 and 12-27.

Tex., Big Spring—HIGH SCHOOL—B.A. 7/12—Big Spring Independent School Dist., Big Spring Senior High School, $650,000. Plans deposit $30, general $30, mechanical work, Puckett & French, 505 Petroleum Bldg., archts. CD 5-6.

Tex., Burkburnett—JUNIOR HIGH SCHOOL—B.A. 7/12—Burkburnett Independent School Dist., Burkburnett Junior High School, Estetera, $250,000. Plans deposit $25, Ray C. Arnnold, Nacol Bldg., Wichita Falls, archt.

† Va., Norfolk—BUILDING—B.A. 7/12, Pub. Wks. Office, Headquarters Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, watering bldg. for Fleet Marine Force at Camp Lejeune, N. C., Ordnance Head, Marine Force at Camp Lejeune, N. C., Ordnance Head, Quarters No. 21065, Spec. 21921. Plans deposit $10.

N. S., Dartmouth—LABORATORY, etc.—B. A. 7/12—J. D. McCarthy, secy., c/o Canadian Commercial Corp., 73 Leon St., Boston, Int. laboratory and

administration Bldg. at Naval Reserve Estate, Summit, Tender No. Gs 29-50-29. Approx. $279,000. Plans deposit $100. CD 4-24.

Ont., Ottawa—LABORATORY—B.A. 7-12—J. D. McCarthy, Secy., Canadian Commercial Corp., 70 Lyon St., Phase 1, Defense Research Electronics Laboratory, Montreal Rd., Tender G3-29-50-30. Approx. $350,000. Plans deposit $100. CD 4/7-48.

R. I., East Providence—HIGH SCHOOL, etc.—B.A. 7/13—At office Supt. Schools, 100 Grove Ave., 1,500 pupil Senior High School and recreational facilities. Plans deposit $150. Charles A. Maguire & Assoc., 2315 Turks Head Bldg., Providence, engrs. CD 8/24.

▲Tex., Galveston—LABORATORY—B. A. 7-13—University of Texas, c/o Bd. Regents, Austin, 5 story, basmt., 54x238 ft. brick, stone, reinforced concrete structure laboratory, $1,500,000. Plans deposit $50. Mark Lemmon, 1210½ Main St., Dallas, consult. archt. Kenneth Franzheim, 2306 Crawford St., Dallas, engr. CD 11/15.

Ont., London—SCHOOL—B. A. 7/13—R. D. Shoales, archt. c/o Bd. Educ., City Hall, 3 story, basmt., 138x134 ft. steel, H. B. Beal Technical and Commercial High School. Approx. $550,000. Plans deposit $50. CD 10/25/44.

Fla., Lakeland—HOUSING—B.A. 7/14—Lakeland Housing Auth., Lakeland, 220 housing units. Plans deposit $30. Thomas V. Talley, P. O. Box 1104, archt. CD 10/27/49.

Calif., Los Angeles—SCHOOL—B.A. 7/14—City Bd. Educ., 1425 S. San Pedro St., Mark Twain Junior High School, 41,500 sq. ft. administration bldg., 13 other sq. ft. industrial arts bldg., $700,000. Kaufman & Stanton, 62 S. Carondelet St., archts. CD 5/2/49.

Calif., Rio Vista—GYMNASIUM—B.A. 7-14—Rio Vista Elementary School Dist., Box 116, Rio Vista, 1 story concrete gymnasium, 1 story frame bus garage, alter storage room, etc. at Rio Vista School, $725,000. Plans deposit $20. Dragon, Schmidts & Hardman, 1320 University Ave., Berkeley, engrs. CD 5/20/49.

▲ Mass., Roslindale—HOUSING—B.A. 7/14—C. T. Riley, chn., Boston Housing Auth., 230 Congress St., 3 story, 252 family unit brick housing, S. of Pt., Boston, 250 T. Arcadia Rd., $2,600,000. Plans deposit $100, refundable. M. A. Dyer Co., 24 School St., Boston, archt. CD 2/27.

O., Delaware—ROOT CELLAR, etc.—B.A. 7/14—Dpt. P. welfare, John H. Lamneck, dir., Columbus, root cellar and zero storage room at Girls' Industrial School.

Tex., Kilgore—AUDITORIUM—B.A. 7/14—Kilgore College, Kilgore, auditorium, $400,000. Plans deposit $25. Broad & Nelson, Reserve Loan Life Bldg., Dallas, archts. CD 5/5.

▲ Tenn., Nashville—OFFICE—B.A. About 7/14—State, Nashville, state office bldg., $6,000,000. Hart & Mc Bryde, Cotton States Bldg., archts. CD 11/29/48.

† North Dakota—SUBSTATIONS—B.A. 7/18—Pub. Buros, Reclamation, Dpt. Interior, Bismarck, construct Rugby, Devils Lake and Jamestown Sub-stations, Transmission Div., Missouri River Basin Proj., Rugby sub-station, approx. 1 mi. south of Rugby, Devils Lake sub-station, mixed steel, south of Devils Lake, Jamestown sub-station approx. 2 mi. southeast of Jamestown Spec. 3102.

▲† Okla., Oklahoma City—HOSPITAL—B.A. 7-18—Veterans Admin., Vermont Ave., between H and I Sts., 500 bed veterans hospital and treatments rooms, N. E. 11 St. and Kelley Ave. $12,000,000. CD 10/25/45.

† Alaska, Fort Richardson—CLUB—B.A. 7/19—U. S. Eng. (APO) c/o PM, Seattle, Wash., Anchorage, 2 story, basmt., 15,000 sq. ft. concrete with concrete block filler walls Enlisted Men's Service Club, Bldg. 6721, Inv. No. S/95-507-50-27. Plans deposit $50.

† Alaska, Fort Richardson—BACHELOR OFFICERS' QUARTERS—B.A. 7/19—U. S. Eng., APO 942 c/o PM, Seattle, Wash.) Anchorage, two 2 story, basmt., approx. 5,500 sq. ft. frame Bachelor Officers' Quarters, Bldgs. 5012 and 5164, Inv. S/95-507-50-28.

▲Md., Baltimore—HOSPITAL—B.A. 7/20—State of Md., Dpt. P. Improv., 500 Park Ave., Zone 1, 8 story, reinforced steel brick stone fireproof hospital, psychiatric units, air-conditioned, for University of Maryland, $2,000,000. Plans deposit $50. Wyatt, Snyder & Gontrum, 210 E. Lexington St., archts.-engrs. Egli & Gomm, Inc., 1019 N. Calvert St., mech. engr. CD 7/14.

Md., Silver Spring—SCHOOL—B.A. 7/20—Bd. Educ., Rockville, 2 story, 67x300 ft. and 67x170 ft. 32-classroom, brick, cinder block, steel, Eastern Suburban Junior High School, $900,000. Plans deposit $30. CD 4/24.

† Washington—TEST HOMES—B.A. 7/20—Bureau Reclamation, Dpt. Interior, 202 N. 2 Ave., yakima, drilling test holes for Roza Power Plant site, about 2 mi. northeast of Yakima, Spec. R1493.

LOW BIDDERS

Fla., Key West—SCHOOL—Monroe Co., 3 school projects from Sunshine Constr. Co., 2313 Patterson Ave., $488,778.

▲Ark., Fort Smith—HOSPITAL—Sparks Memorial Hospital, 1115 S. I St., hospital, from Frazer Constr. Co., Inc., 322 S. 9 St., $1,585,900. CD 6-17.

Calif., Chester—HOSPITAL UNIT—Seneca Hospital Dist., Justice Court Bldg., June 20, 10 bed hospital unit, from Design Co., 770 Fairmont Ave., Reno, $255,000. Douglas D. Stone & Max B. Mulley, 619 Lincoln St., San Francisco, archts.

Calif., Corning—HOSPITAL—Corning Memorial Hospital Dist., Corning, June 26, 1 story, basmt., Type II, 25-bed hospital, from Moore & Roberts, 693 Mission St., San Francisco, $350,993. CD 5-27.

† Calif., Fresno—ARMORY, etc.—U. S. Eng., 180 New Montgomery St., San Francisco, June 22, armory and vehicle storage, Spec. 04-230-50-108, from Oppenheim & King, Box 1923, Fresno, $307,207. CD 6-24.

Calif., San Francisco—SCHOOL—Dpt. P. Wks., City Hall, general contract 1 story, concrete Lilea School, Bldg. B14, from James Barnes, 750 Folsom St., $714,000. CD 6-1.

† Calif., San Francisco—ARMORY—U. S. Eng., 180 New Montgomery St., June 22, armory and vehicle storage bldg., at Presidio of San Francisco, Spec. 04-230-50-122, from A. M. Hardy, 1 S. Clementina St., $383,875. CD 6-24.

Ill., Minonk—SCHOOL—Community High School Bd., 2 story, 32,000 sq. ft., steel, brick, concrete consolidated school, from T. S. Wirtz, Hayes Bldg., Janesville, Wis., $420,000. Louis H. Gerding, Ottawa, Ill., archt., R. J. Graham, 343 S. Dearborn St., Chicago, Engr. & Engr.

Mass., Haverhill—HOUSING—City of Haverhill Housing Auth., City Hall, June 14, 200-2 Veterans Housing Proj., Haverhill, from Pitman & Brown Co., 40 Bridge St., Salem, $699,985. CD 5/23.

▲† N. M., Los Alamos—DORMITORY—U. S. Atomic Energy Comm., Los Alamos, June 27, twenty-two 2 story wood frame dormitories, central heating, from Utah Leavell Co., Los Alamos, $1,325,983. Est. $1,000,000-$1,500,000. CD 6-29.

N. C., High Point—SCHOOLS—Bd. School Comrs., 400 English St., June 20, First Ward Elementary School and Ann Penn High School, from W. K. Stewart & Son, High Point, $704,000. CD 6-6.

Pa., Torrance—TUBERCULAR PATIENTS—General State Auth., 18 and Herr Sts., Harrisburg, rejected bids May 24, general contract building for tubercular patients at Torrance State Hospital, L. B. $892,000. Will re-advertise. CD 5-29, under LB.

Tex., Beaumont—ENGINEERING, etc.—Lamar State College of Technology, A. M. McAfee, chn., Bd. Regents, Beaumont, June 19, masonry engineering, boiler house, home economics, home economics cottage, from Farnsworth & Chambers Inc., P. O. Box 74, Houston, $837,583. Est. $550,000. CD 6-1.

Tex., Houston—POLICE—City City Hall, 900 Brazos St., June 21, ventilation, plumbing, air-conditioning for city police and administration bldg., from Charles S. Heyne Co., 2002 Richacel St., $461,462. CD 6-14.

▲Va., Roanoke—HOSPITAL—State of Virginia, Richmond, June 23, Catawba Sanatorium Hospital and Nurses Home, from J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., $1,115,000. CD 5-27.

CONTRACTS AWARDED

▲ Calif., San Francisco—HOSPITAL—Bd. Regents University of California, Berkeley, general contract 12 story, basmt., 370 bed structural steel reinforced teaching hospital at Medical Center, Parnassus Ave., Inter-Coast Co., 923 Folsom St., San Francisco, $5,075,000, heating and ventilating to Murelich Mfg. Co., 44 Layne Pl., San Bruno, $742,247. Bids 6/9. CD 6-15, under LB.

▲ Fla., St. Petersburg—HOSPITAL—City, Mound Park Hospital, to J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., $2,661,500. Bids 6-14. CD 6-22, under LB.

Ill., DeKalb—RESIDENCE HALL—State Armory Bldg., Springfield, general contract, Mens Residence Hall, Northern Illinois State Teachers College, to Federal Constr. Co., 327 S. La Salle St., Chicago, Ill., Zone 3, $751,911. Bids 5-16, awarded 6-19. CD 6-24, under LB.

La., Port Sulphur—SCHOOL—Plaquemines Parish School Bd., Point-a-la-Hache, high school, to D. D. Pittman Constr. Co., 3022 48 St., Metairie, New Orleans, $699,995. Bids 6/12. CD 6-14, under LB.

▲† N. M., Los Alamos—BUILDINGS—U. S. Atomic Energy Comm., Los Alamos, buildings, facilities, Inv. No. 261-50-84 to R. J. Dunn Constr. Co., P. O. Box 233, Albuquerque, $2,062,601. Bids 6-16. CD 6-29, under LB.

▲ N. M., Los Alamos—DORMITORY—U. S. Atomic Energy Comm., Los Alamos, twenty-two 2 story wood frame dormitories to Utah Leavell Co., Los Alamos, $1,325,983. Est. $1,000,000-$1,500,000. Bids 6-17. CD 6-29, under LB.

N. C., Chapel Hill—SCHOOL OF COMMERCE—University of North Carolina, Chapel Hill, general contract School of Commerce Bldg., A. B. Jones, to Jones Constr. Co., 209 W. 4 St., Charlotte, $968,100. Bids 6-14. CD 6-19, under LB.

▲ N. C., Raleigh—OFFICE—State Hy. & P. Wks. Comm., Raleigh, highway office bldg. to Thompson & Street Co., 4801 Indhurgh Dr., N. E., Atlanta, Ga., $1,442,672. Bids 6-22, awarded 6-26. CD 6-27, under LB.

Okla., Stillwater—HOME ECONOMICS—Oklahoma A & M College, Stillwater, 100 units for home economics bldg. at Okla. A & M College, to Bond Constr. Co., Box H, Bldg., Oklahoma City, Zone 2, $723,260. Bids $726,000, Awarded 6-15. Philip Wilber, Stillwater, archt.

Ore., Corvallis—ANIMAL INDUSTRIES—Oregon Bd. High Educ., University of Oregon, Eugene, animal industries bldg. at Oregon State College, to Donald M. Drake, Lewis Bldg., Portland, $711,770. Est. $500,000. Bids 5-2, awarded 6-13. CD 5/9, under LB.

S. C., Chester—HOSPITAL—Chester Co., Chester hospital, to Rutter & Starkeifford Constr. Co., Allen Bldg., Greenville, $745,740. Bids 6/8. CD 6-14, under LB.

Wyo., Casper—SCHOOL—School Dist. 2, High School Bldg., Casper, 1 story, brick, 120x240 ft. Willard School addn., 1 story, 136x195 ft. Grant School addn., and 1 story 210x249 ft. Garfield School addn., to Cahill-Mooney Constr. Co., 501 E. 2 St., $741,800. Bids 6-3, awarded 6-13. CD 5/15.

▲ Ont., Port Arthur—HOSPITAL—Dpt. P. Wks., Toronto, hospital, recreation and kitchen wing, pavilions E-1 and W-1 and power house, to Barrett McQueen Co. Ltd., 460 Christian St., Fort William, Approx. $1,500,000. CD o. 2.

COMMERCIAL BUILDINGS

BIDS ASKED

Tex., Marshall—DORMITORY—B.A. 7/13—East Texas Baptist College, Marshall, 204 student capacity boys dormitory, $275,000. Extended date. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, engr. and archt. CD 6-9.

▲ Mich., Traverse City—HOSPITAL—B.A. 7/25—James Decker, Munson Hospital, Traverse City, general contract, hospital expansion. Total est. $2,000,000. CD 11/2/44.

Miss., Canton—HOSPITAL—B.A. About 7/31—Kings Daughter Hospital, c/o Trapp & Liddle, archts., 204 Barnett-Mladen Bldg., Jackson, hospital addn. $520,000. CD 4-7.

Mo., Kirkwood—(St. Louis, 22 P.O.)—CHURCH—B.A. Archt. & Lr.—St. Peter's Catholic Parish, Rev. Alphonse L. Westhoff, pastor, 214 W. Argonne Dr., 55x150 ft. brick, steel, concrete church, to seat approx. 800 persons, incl. tower, etc. Jos. D. Murphy, 4740 McPherson Ave., St. Louis, Zone 8, archt.

Ill., Madison—CHURCH—B.A. About 4-20—Roman Catholic Diocese, Madison, church, $330,000. Harry J. Hellmuth, Florissant, Mo., archt.

Ill., Aurora—Bids Asked, MARMION ABBEY—Bids Asked, Benedictine Fathers, Aurora, six story, basmt., Marmion Abbey, incl. 2 chapels, guest rooms, dining room, kitchen, machine shop, carpenter shop, on 230 acre site, $3,000,000. Edw. J. Belli, 7 S. Dearborn St., Chicago, Zone 1, archt.

▲ Nev., Las Vegas—HOTEL—Bids Asked—Desert Inn, c/o Wilbur Clark, Las Vegas, 125-room hotel addn., $1,250,000. Jack Lessman, c/o owner, archt. CD 6-22.

Tex., Corpus Christi—COMMERCIAL—Bids Asked—G. R. Swantner, S. Alameda St., commercial, Alameda, Minnesota, Community, $300,000, commercial units, at 6 Points, $300,000. CD 6-7.

Wis., Madison—APARTMENT—Bids Asked—Lake Shore Apartment Corp., c/o Lewis Sibetz, archt., 103 W. Main St., 6 story, basmt. 50x170 ft., reinforced brick apartment.

SOON LETS CONTRACT

Ill., Lisle—DORMITORY—St. Procopius College, Lisle, soon lets contract 3 story 90,000 sq. ft. steel brick cut stone dormitory, $500,000. Paul P. Schmoll, 36 Linden St., Passaic, N. J., archt.

O., Lakewood—CHURCH—Leo J. Barrett, archt., 504 Guardian Savings Bldg., Cleveland, soon lets contract 2 story basmt., brick, stone church and educational bldg. for Lakewood Christian Church, Detroit and Riverside Sts. $260,000. CD 12-2.

Tex., Austin—HEADQUARTERS—Texas State Teachers Assn., C. H. Yeamyson, exec., Littlefield Bldg., soon lets contract headquarters, Approx. $350,000. Page, Southerland & Page, 612 West Ave., archts. CD 6-17.

▲ Tex., Dallas—HOSPITAL—St. Paul's Hospital, 5500 Swiss Ave., alterations, 3121 Bryan St., Swiss Ave. Alterations, administration, 3121 Bryan St., Swiss Ave., 2 story basmt., approx. 45,000 sq. ft. hospital and alterating existing unit, $1,700,000. Plans deposit $25. M. C. Kleiner & B. W. Lanum, 2815 McKinley Sts., archts. CD 4-24.

Tex., Waco—HEADQUARTERS FACILITIES—Brazos River Transmission Electric Cooperative, Waco, soon lets contract 2 story 46x93 ft. headquarters facilities, maintenance and storage, $350,000. Harvie & Rodgers, 1205 Medical Arts Bldg., archts. CD 2-7.

Fla., Winter Haven—CHURCH—First Methodist Church, c/o Hunter & McMurry, archts., 51½ W. Church Ave., Knoxville, Tenn., soon lets contract (church, $245,000. CD 4-7.

LOW BIDDERS

Ala., Birmingham—OFFICE—Clow Steel Pipe & Iron Co., c/o Wm. Reuben, Davis & Co., archts., American Life Bldg., office from J. F. Holley, 905 S. Ave. N., $284,000. CD 5/12.

Fla., Fort Lauderdale—HOTEL—Phoenix Investment Co., Robert M. Little & W. G. Crawford, 220 S. E. 8 Ave., hotel from Caldwell-Scott Eng. & Constr. Co., 340 S. E. 24 St., Approx. $300,000.

Ill., Cairo—HOSPITAL—Sisters of the Holy Cross, c/o Sister M. Helen Frances, superior, St. Marys Hospital, Joint general contract re-inforced brick, steel stone hospital from McCarthy Brothers Constr. Co., 4965 Delmar Blvd., St. Louis 8, Mo., $666,390. CD 7-10/48.

▲ N. C., Cullowhee—SCHOOL—CLASSROOM, etc.—West Carolina Teachers College, Cullowhee, June 27, science classroom bldg. and library from J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, $2,135,600. CD o. 1.

▲ Pa., Harrisburg—HOSPITAL—Harrisburg Hospital, Front and Maclay Sts., June 2, Harrisburg Hospital

Alt. at ann. addn., 3 Front St. from Ritter Bldg., 8511 N. Cameron St., $2,358,032. CD 6/16.

Tex., Dallas—Y.M.C.A. BLDG.—Park Cities Young Mens Christian Assn., c/o Felix R. McKnight, 6326 Westchester St., June 8, Y. M. C. A. bldg., Park Cities, from Bateson Constr. Co., Irwin Keasler Bldg., $298,686. CD 5/24.

▲ Tex., Randolph Field (San Antonio)—HOUSING—Fourth Army Headquarters, Fort Sam Houston, construct, manage and finance 500 housing units for military personnel, from Murchison Bros., 1315 Pacific St., Dallas. Approx. $5,000,000. Walter W. Ahlschlager, Jr., 212 E. 11 Paul St., Dallas, archt.

CONTRACTS AWARDED

▲ Calif., Compton—DWELLINGS—Sunkist Gardens Co., 9307 Wilshire Blvd., Los Angeles, 234 frame dwellings in tract 6554, Owner builds. $1,504,500. Southwest Drafting Service, 2724 Florence Ave., Los Angeles, archt.

Calif., Concord—RESIDENCES—Morgan, Inc., 3625 McArthur Blvd., Oakland, 79 residences in Gregory Gardens, 4 in Pleasant Hill area near here. Owner builds. $553,000.

Calif., San Rafael—RESIDENCES—P. F. Nolan Co., 408 San Anselmo Ave., San Anselmo, 25 large residences in Donahue Gardens. Owner builds. $700,000. Frank Aitken, Jr., 523 Magnolia St., Larkspur, engr.

▲ Fla., Cocoa—HOUSING—Hillyer & Lovell, Inc., 666 Lyal St., Jacksonville Zone 1, contract, manage and finance 180 family unit housing for air force personnel. Owner builds. Approx. $2,000,000. Awarded 4/28.

Fla., Fort Lauderdale—RESIDENCES—Fort Lauderdale Development, 41 N. W. 14th St., Miami, 48 residences. Owner builds. $300,000.

Fla., Miami—HOMES—N Seven, Inc., c/o contractor to homes to Nichol Coeste, Co., 11700 N. W. Ave., North Miami. $400,000.

▲ Ill., Evanston—STORE—Henry C. Lytton & Co., Church and Sherman Sts., structural steel, stone, brick store, 1 to Wm. E. Schweitzer, 2207 Dodge St., Evanston. $1,000,000. Bids 6/16, revised to 7/19. CD 6/7.

Ia., Davenport—HOSPITAL—St. Lukes Hospital, 1223 Hayes Ave., Sioux City, construct 5 story hospital addn., to Tunnicliff Constr. Co., 105 Fillmore St., $812,600. CD 4/20, letter 18.

Md., Baltimore—RESIDENCES—National Realty Corp., 22 E. 21 St., 2 story home, twenty-four 14x40x26 ft. and six 14x32x26 ft. masonry residences, 1404-22 and 2418-30 Edgecombe Circle, owner builds. $250,000. Wm. Forrest Gray, 12 E. Pleasant St., archt. Albert Palmer, 332 N. Charles St., civil engr.

N. J., Elizabeth—APARTMENTS—Ridgewood Apartments, c/o Barney Pincus, 41 W. 25th St., three 2 story 48 unit apartments, Rush Pl. and Ridgewood Ave., owner builds. $325,000.

▲ N. J., Elizabeth—APARTMENT—Syndicate, c/o Louis Schlesinger, 1083 Raymond Blvd., Newark, 2 story apartment, 1474-1494 North Ave. and 1 N. Broad St., Owner builds. $1,248,000.

N. J., Hackensack—SHOPPING CENTER—B. G. & G. Construction, Atlantic and Westview Aves., 100 ft. frontage and 125 depth, shopping center with 10,000 sq. ft. parking lot, near Passaic St. and The Rockland Shopping Center, Route 9W, Bids $500,000. Peter H. Hutter, 175 Main St., W. Englewood, engr.

N. J., Red Bank—HOSPITAL—Riverview Hospital, 19 Harris Place, 4 story 75 bed hospital addn., to Monmouth Industrial Co., 1 Main St., Asbury Park. Approx. $688,400. Bids 5/11. CD 5/17.

N. M., Albuquerque—HOSPITAL—Presbyterian Hospital Center, 811 Tijeras, Albuquerque, addn. to hospital, Architects Planning Group, 1211 N. 1 St., $764,746. Bids 5/18.

N. Y., Bellerose—HOSPITAL—Community Hospital of Jamaica, 90-41 Grand Central Parkway, Jamaica, 2 story addn., Approx. $750,000.

▲ N. Y., Brooklyn—APARTMENT—Nine Park Corp., c/o Irving & Sydney W. Wexner, 17 Battery Place, 2 story apartment, Ocean Ave. and Parkside Ave., Owner builds. $1,500,000.

▲ N. Y., Massapequa Park—HOUSES—Harbor Realty Corp., 1 Hempstead Ave., Lynbrook, 116 Queens Forest Hills, 2 one family houses, Owner builds. $2,000,000.

▲ N. Y., Merrick—HOUSES—Lakeside Ranch Homes, 1 Hempstead Ave., Lynbrook, 116 one family houses, Owner builds. $1,000,000.

N. Y., New Rochelle—APARTMENT—Pennsylvania Mutual Life Insurance Co., 600 Fifth Ave., New York, 2 story apartment, 427 Clove Lake Ave., New Rochelle, 24 family apartment, Pelham Parkway and Bronxwood Ave., Bronx, 161-24 East Parkway, Bronx, Owner builds. $900,000.

N. Y., New York—APARTMENT—Bellmore Realty Co., c/o Irving & Sam Aufhes, 118 E. 28 St., Zone 16, 16 story apartment, 1st Ave. and 23rd St., Owner builds. $500,000.

▲ N. Y., New York—APARTMENT—Farman Realty, Inc., c/o S. D. Kessler & Sons, Aufhes, 118 E. 28 St., Zone 16, 16 story apartment, 2nd Ave. and 23rd St., brick hospital to Brookdale Tenth Ave., W. 211 St., Owner builds. $2,000,000.

▲ O., Euclid—HOMES—Douglas G. Alcott & Sons, Williamson Bldg., Cleveland, one hundred seventy-five 1½ story ranch type homes on Lotan Blvd., to Lotan Estate Sect., separate contracts. $3,150,000.

Pa., New Kensington—HOSPITAL—Citizens General Hospital, New Kensington, June 13, 5 story, brick, steel hospital addn., from Clement Martin, Inc., 6230 Penn Ave., Pittsburgh, $798,666. CD 6/2.

Pa., Pittsburgh—APARTMENTS—Vue Apartments, Inc., Nos. 1 and 2, 701 Washington Rd., 2 and 3 story, brick, block apartments and garage, Leland Park, near here, Owner builds. $750,000. Phillip Friedman, 121 S. Negley St., archt.

Tex., Dallas—DWELLINGS—J. L. Ladd, 1015 McLean St., 50 dwellings, day labor. Approx. $550,000. CD 6/9.

▲ Tex., Galena Park—DWELLINGS—Frank Teague & Fred H. Wolf, Union Natl. Bank Bldg., Houston, 175 dwellings. Owner builds. Approx. $1,225,000. CD 6/5.

Tex., Houston—RESIDENCES—A. E. Bailey, 3016 Jarrard St., 219 Negro residences, own forces. Approx. $990,000. CD 5/17.

Tex., Houston—SHOPPING CENTER—Berne Constr. Co., 1512 Preston St., shopping center. Owner builds. Approx. $310,000. CD 4/17.

Tex., Lubbock—HOUSING—Spring Rental Houses A, Inc., 114 N. College St., 40 family housing units. Owner builds. Approx. $280,000. CD 6/7.

Tex., San Antonio—DWELLINGS—Battle Homes, Inc., Basse Rd., 50 dwellings. Owner builds. $350,000. CD 6/8.

▲ Tex., San Antonio—DWELLINGS—C. L. Browning, Jr., 811 Insurance Bldg., Sect. 2, 120 dwellings, 50 acre tract, off W. W. White and St. Hedwig Rds., day labor. Approx. $1,000,000. CD 4/25.

Tex., San Antonio—DWELLINGS—Bissby Tre Builder, Inc., 325 Morningside Dr., 75 dwellings. Owner builds. Approx. $700,000. CD 6/5.

Tex., San Antonio—SUPERMARKET—H. E. Butt Grocery Co., 600 Roslyn Ave., supermarket in the Highlands. Owner builds. Approx. $250,000. CD 11-11.

Tex., San Antonio—HOUSING—Lowery, Cato & Hubbard, Inc., 812 Travis Bldg., private housing, day labor. $275,000. CD 6/19.

Va., Richmond—HOMES—Virginia Real Estate Co., 600 E. Franklin St., 108 homes. Owner builds. $700,000.

Wis., Rhinelander—SCHOOL—Zion Evangelical Lutheran Church, 14 W. Frederick St., 1 and 2 story, part to be built of 8" x 8" x 12" steel brick parochial school, to Thomsen Abbott Constr. Co., 211 S. Central St., Marshfield. Approx. $250,000. Awarded 6/15. E. A. Stuenkenack, 705 Erie Ave., Sheboygan, archt.

Wis., Sheboygan Falls—SCHOOL—St. Mary's Catholic Congregation, Sheboygan Falls, 2 story 62x96 ft. parochial school, Rummler Constr. Co., Lower Falls Rd., Sheboygan. Approx. $275,000. E. A. Stuenkenack, 78 Erie Ave., Sheboygan, archt.

Alaska, Anchorage—APARTMENT—Jefferson Court Apartments, Inc., 308 Lowman Bldg., Seattle, Wash., and Jefferson Court Apartment, day labor. Approx. $939,000. G. C. Fisher, Jones Bldg., Seattle, Wash., archt. CD 6/2.

INDUSTRIAL BUILDINGS

BIDS ASKED

Fla., Miami—SHOPS, etc.—B.A. 7.23, Seaboard Air Line Ry., W. D. Simpson, chf. engr., 341 R.R. Bldg., Norfolk, Va., railway shops and yards.

Ill., Chicago—SUB-STATION—Bids Asked—Common-wealth Edison Co., 72 W. Adams St., Zone 3, 1 story, steel frame, concrete, Kinzie Sub-station, Kinzie & Grand Sts., Zone 11, $250,000. Graham, Anderson, Probst & White, 80 E. Jackson St., Zone 4, archts.

Mass., Cambridge—FACTORY—Bids Asked—American Felt Co., 1 Harvard St., 1 story, 1 level, 100 ft. by 100 ft., 1 story, 80x125 ft. brick masonry factory addn., estimated at $100,000. Bruce F. Warrick, 210 Commonwealth Ave., Boston, archt.

Tex., Port Arthur—PLANT—Bids Asked—United States Rubber Products Co., Post Arthur, steel, concrete & brick addn., to cost $1,000,000.

Tex., Waco—FOOD STORAGE—Bids Asked—Charles B. Hunt, Inc., 1021 Franklin St., Avon, storage, Waterway Zone, 1021 Franklin St., Avon, storage, Waterway Zone, 1021 Franklin St., Avon, storage, Waterway Zone,

are businessmen

COLD-BLOODED?

OF COURSE NOT! Literally, their normal body temperature is 98.6—same as laborers, engineers or any other group of people. And, figuratively, they're no more, or no less, cold-blooded—as a group.

We all know unreasonable generalizations can be dangerously false. Common sense and on-the-job experience show us the value of dealing specifically with ideas, problems—and *people*.

Let's not make the big—and costly—mistake, then, of generalizing on religious or racial groups. Adopt and *carry out* these common sense principles:

1. Accept—or reject—people on *their individual worth.*
2. Don't listen to or spread rumors against a race or a religion.
3. Speak up, wherever we are, *against* prejudice. Work for understanding.

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N. S. Diepbrook—WHARF REPAIRS—H A. 7/19—J. D. McCarthy, secy, Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont. wharf repairs, H. M. S. Cormorant's Tender No. GS-28-377. Approx. $40,000. Plans deposit $25. CD 3/6.

† California—CONTROL BOARD EXTNS.—B. A. 7/20—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Herdyn Calif., one main control board extension for 230-kv. switch Shasta (Unit) 1 and 2 for Trinity Switchyard, Central Valley Proj., Spec. 3091. L. N. McClellan, ch. engr.

† Colorado—TRANSFORMER, etc.—B. A. 7/20—Bureau Rec., Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, transformer with outdoor lightning arresters, mounted the tank for Flatiron construction substation, Colorado-Big Thompson Proj., Spec. 3093. L. N. McClellan, ch. engr.

† North Dakota—CONTROL BOARD and UNMOUNTED RELAYS—B. A. 7/20, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Rugby, Devils Lake and Jamestown 3 control boards and unmounted relays for Rugby, Devils Lake and Jamestown substations, Transmission Div., Missouri River Basin Proj., Spec. 3098.

† N. M., Las Cruces—ROCKET LAUNCHERS—B. A. Apr. 20, Capt. Wm. Long, Box 1663, Albuquerque, rocket launcher storage and service units, Proving Ground, White Sands, P. O. Pvt. Jones, N. 524 29,000 50 lb. CD 5/18, other lots.

† North Dakota—POWER TRANSFORMERS, etc.—B. A. 7/26, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars at Rugby, Devils Lake, Dakota, Carrington, Jamestown, Valley City, Edgeley, Fargo, Washburn, Leeds, Bisbee, Rolla and Bismarck, power transformers, voltage regulating transformer, power circuit breakers, distribution transformers, instrument transformers, interrupter switches, air switches, disconnecting switches, lightning arresters, for Rugby, Devils Lake, Jamestown, North Dakota, switching and substations, Transmission Div., Missouri River Basin Proj., Spec. 3100.

† Wyoming—SWITCHGEAR, etc.—B. A. 7/27, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Casper, Alcova, transformers, control switchgear, potential transformers, current transformers, bushings, control cabinet for Alcova Switching and Transmission Div., Missouri River Basin Proj., Spec. 3104. L. N. McClellan, ch. engr.

† Arizona-California-Nevada—DISCONNECTING SWITCHES, etc.—B. A. 8/3, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Boulder City, New disconnecting switches, transformers, transformer mounts, distribution board for Arizona-Nevada 230-kilovolt switching station, Boulder Canyon Proj., Spec. 3120. L. N. McClellan, ch. engr.

† Colorado—TRANSFORMERS, etc.—B. A. 8/3, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Campion, transformers, for Pole Hill and Flatiron Power Plants, Colorado-Big Thompson Proj., Spec. 3106. L. N. McClellan, ch. engr.

† North Dakota—DISTRIBUTION BOARDS, etc.—B. A. 8/3, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Rugby, Devils Lake, Jamestown, distribution boards, one heating distribution board, 2 battery chargers for Rugby substation, 2 battery chargers for Devils Lake substation, one battery charger control board and one 125 volt direct current supply board, 2 battery chargers for Jamestown substation, Transmission Div., Missouri River Basin Proj., Spec. 3107.

† Wyoming—POWER and LIGHTING DISTRIBUTION BOARDS, etc.—B. A. 8/3, Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Thermopolis, power and lighting distribution board, heating board for Thermopolis substation, Transmission Div., Missouri River Basin Proj., Spec. 3100. L. N. McClellan, ch. engr.

LOW BIDDERS

California—TANK, WATER DEVELOPMENT PROJECT—State Div. Architecture, P. Wks. Bldg., Sacramento, June 20, water development project 2 and Columbia Historic State Park, from Tuolumne County Comm. Yd. Ave. and San Leandro Blvd., Oakland. $96,634 CD 6-1.

† Calif., Lathrop—RAILROAD TRACK—U. S. Army Purchasing Office, Sharp General Depot, Lathrop, one set reinforced concrete railroad track, Sharp General Depot, Tracy Annex, Lathrop, No. DA-04-613-qm-4 from Utah Construction Co., Box 1549, Richmond. $302,263.

Calif., San Francisco—TROLLEY SYSTEMS—Public Utilities Comm., City Hall, June 20, trolley systems for Nos. 1, 2 and 4 lines, for 31 from Seventh to 24th and National St. $149,522. CD 6-9.

Calif., Stockton—GROUND IMPROVEMENT—State Div. Architecture, P. Wks. Bldg., Sacramento, ground improvement at Stockton State Hospital, including sand drains and grouting, from Stephen L. Vasta, 70 N. El Camino Real, San Mateo. $51,454. Anson Boyd, Sacramento, state archt.

† Colorado—TURBINES—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, June 15, turbines for Pole Hill and Flatiron Power Plants, near Loveland, Larimer Co., Colorado-Big Thompson Proj., Spec. 2946, from Pelton Water Wheel Co., 2432 17 St., San Francisco, Calif., $565,000. CD 5/10.

Fla., Miami—SWIMMING POOL, etc.—Golden Strand Hotel Co., c/o Igor B. Polevitzky, archt., 250 N. E. 54 St., June 20, swimming pool and cabana bldg., from Kettman Bldg. Corp., 634 Lincoln Rd., Miami Beach. $85,938. CD 6-10.

† Idaho, Pocatello—SPRINKLER SYSTEM—Pub. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, Wash., sprinkler sys. at Naval & Marine Corps. Training Center, from R. L. Barr, 1220 Idx St., Seattle, Wash. $53,321.

La., Lafayette—ELECTRICAL DISTRIBUTION SYSTEM—City, June 20, electric distr. sys., addns. alterations, from Electrical Constr. Co., c/o Barnard & Burk, engrs., Triad Bldg., Baton Rouge. $92,900. CD 6-1.

La., New Orleans—WHARF—Port of New Orleans, 2 Canal St., June 21, furnishing, erecting approx. 345 tons structural steel framing for substructure, Erato St. Wharf, Proj. S. D. 9482, from Delattur Iron & Steel Co., Decatur, Ala. $62,962. CD 6-8.

† Montana—STEEL ROOF DECKING, etc.—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., rejected bids, June 8, steel roof decking, miscellaneous work for Hungry Horse Power Plant, Hungry Horse Project, Spec. 3098. Will readvertise.

North Dakota—RURAL DISTRIBUTION LINES—Baker Electric Cooperative, Cando, June 13, 505 mi. rural distr. lines, Benson and Pierce Counties, from Zumbro Constr. Co., Minot, N. D. $499,223. CD 5-24.

† North Dakota—TRANSMISSION LINE—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., June 15, galvanized steel single circuit towers, approximately 70 miles, Jamestown 230-kv. transmission line, Missouri River Basin Proj., Transmission Div., Spec. 3013 from American Bridge Co., Frick Bldg., Pittsburgh, Pa., and Lone Star Steel Co., Frick Bldg., Pittsburgh, Pa., and Lone Star Steel Co., Frick Bldg., Denver, Colo. $772,145.

Pennsylvania—GUARD RAIL, etc.—Pennsylvania Turnpike Com., 511 N. 2 St., Harrisburg, June 6, erect guard rail and construct shoulder curbing and drainage, 23.1 mi. on Pennsylvania Turnpike System, from Middletown to King of Prussia and from Irwin to Monroeville, 2,350,400 lin. ft. guard rail erection and planing 2,350,400 lin. ft. road shoulder curb, from Herkles & Mayo, 6100 N. 20 St., Philadelphia. $933,039.

† West Virginia—RAILROAD RELOCATION—U. S. Eng., Marmet Ave. and B. & O., Huntington, June 16, Baltimore & Ohio Relocation Sect. 1, Sutton Reservoir Proj., Braxton Co., Serial No. Cml Nos. 46,023,53,110, from The Sutton Co., Inc., Radford, Va. $485,129. CD 5-22.

CONTRACTS AWARDED

Ala., Calera—GAS SYSTEM—Town, natural gas sys., to P. A. Buchana Constr. Co., P. O. Box 1903, Birmingham. $85,977. CD 6-15.

Ala., Montevallo—NATURAL GAS SYSTEM—City, natural gas sys., to Stewart C. Holmes, 500 Euclid Ave., Birmingham. $114,577. Bids 6-21. CD 6-15.

† Calif., Livermore—PIT FOUNDATIONS—California Research & Development, 200 Bush St., San Francisco, pit foundations for arc-arator bldg., to Dinwiddie Constr. Co., 210 Crocker Bldg., San Francisco. $93,225.

▲ Missouri—GAS DISTRIBUTION LINES—Laclede Gas Co., 1112 Locust St., St. Louis, Zone 3, laying gas mains and serv. lines various streets, St. Louis and St. Louis Co., to tie in with new natural gas trunk line from company's plant, Mississippi River near River Des Peres, southeastern edge of St. Louis and point near Natural Bridge and Broad Rd., St. Louis to Frazier-Davis Constr. Co., 1314 Mackind Ave., St. Louis, Zone 13. Approx. $2,600,000.

Missouri—RURAL DISTRIBUTION LINES—Lewis County Rural Electric Cooperative Assn., Monroe Ave., Monticello, Lewis County, 156 mi. rural distr. lines, Lewis County, Sect. 1, 140.92 mi. rural distr. lines, 40 mi. transmission line, Sect. II, in Clark, Lewis and Knox counties, Proj. Mo. 23P, Sects. I and II, to Lee-Atherton Co., 1116 Baltimore Ave., Kansas City, Mo. $546,427. Bids 5-26. CD 6-6.

† Oregon—TRANSMISSION LINE—Bonneville Power Adm., Box 491, Portland, Zone B, energy right of way, from Pendleton-Umatilla 230 kv. trans. system line, Oregon-Union and Umatilla Counties, to P. & R. Constr. Co., Tillamook. $70,860. Bids 6-14. CD 6-7.

▲ Virginia—GAS LINE—Commonwealth Natural Gas Corp., 1st Union proj., 219 E. Broad St., Richmond, 210 mi. gas line for natural gas from Standards-ville, Richmond Co., Va., to Ky., Smith & Sons, Edmonton, Ky. $5,733,000. Ford, Bacon & Davis, Inc., Brodway, New York, N. Y., and 3101 W. Cary St., Richmond, engrs.

Wis., Wausau—GRANDSTAND—Bd. Educ., reinforced grandstand at Rothbeck Constr. Co., 512 3 St., $89,792. Bids 5-31.

▲ Alta., Edmonton—YARD PIPES—British American Oil Co. Ltd., Edmonton, paving yard pipes at new refinery, water lines, other buildings and generally, offsite works, c/o W. M. Bischoff, 2220 W. 7 St., Los Angeles, Calif., U. S. A. $1,350,000.

Proposal Advertisements see pp. 108 110

OFFICIAL PROPOSALS

Bids: July 24, 1950 (851)

Earth Dam & Impounding Reservoir

EARTH DAM AND IMPOUNDING RESERVOIR
EXCAVATION AND GRADING OF RELOCATED ROUTE 380
EXCAVATION OF FILTER PLANT SITE

Municipal Authority of Westmoreland County
Greensburg, Pennsylvania

Sealed proposals will be received by the undersigned, at the offices of the Municipal Authority of Westmoreland County, 230 South Pennsylvania Avenue, Greensburg, Pennsylvania, until 7:30 P.M. Eastern Daylight Saving Time, *July 24, 1950*, at which place and hour they will be publicly opened and read, for furnishing all necessary labor, materials and equipment, and performing all work for the construction of AN EARTH DAM AND IMPOUNDING RESERVOIR and all appurtenances, including the road grading and excavation of relocated Route 380, and the excavation of filter plant area, in Westmoreland County, for the Municipal Authority of Westmoreland County.

Proposal must cover the entire construction of the project, equipment, labor and materials for the project. The right is reserved to reject any or all proposals and to readvertise and award the contract in the regular manner, or to waive any informality in the proposals received and to accept any proposal deemed to be most favorable to the interest of the Municipal Authority of Westmoreland County.

Each proposal must be accompanied by a money deposit in the form of a draft or a certified check on a solvent bank, payable to the Municipal Authority of Westmoreland County, in an amount not less than ten (10) per cent of the bid total, in accordance with the provisions contained in the Specifications. A satisfactory bidder's bond will be accepted in lieu of check. The deposits of bidders other than the one to whom the contract is awarded will be returned immediately after the award is made. The successful bidder will be required to execute a contract and furnish bonds within ten (10) days from the date of notice of award delivered or mailed to him. Upon execution of the contract and approval of the bonds the deposit of the successful bidder will be returned. The amount of security required for the faithful performance of the work will be one hundred (100) per cent of the estimated cost of the work according to the contract price.

Copies of the Contract Documents, including Plans and Specifications, may be seen at the office of Gannett Fleming Corddry and Carpenter, Inc., 600 North Second Street, Harrisburg, Pennsylvania, or at the office of the Municipal Authority of Westmoreland County, 230 South Pennsylvania Avenue, Greensburg, Pennsylvania, on or after July 5th, 1950, or they may be obtained at either of the above places upon deposit of Twenty-five Dollars ($25.00) for each set. A refund will be made in full to actual bidders for return of one set in good condition within ten (10) days after closing date for receipt of bids; refund for return of all other sets, in good condition within the same period will be fifty (50) per cent of the deposit.

The Municipal Authority of
Westmoreland County,
Greensburg, Pa.

Gannett Fleming Corddry
& Carpenter, Inc.
Engineers
600 North Second Street
Harrisburg, Pa.

(Continued on page 109)

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

(Continued from page 108)

(8523)

New Jersey Turnpike Authority

* * *

Sealed proposals will be received by the New Jersey Turnpike Authority for the following contracts:

CONTRACT NO. 32

The work to be performed under this contract involves the construction of the Substructures for four bridges and other incidental work in connection with the construction of the New Jersey Turnpike between Relocated Bayway and the Elizabeth Interchange in the city of Elizabeth, Union County.

Principal items of work include:

Open Foundation Excavation	10,400 Cu. Yds.
Furnishing and Driving Steel Bearing Piles	24,000 Lin. Ft.
Pile Coating	12,000 Lin. Ft.
Cast-in-Place Concrete Bearing Piles	24,000 Lin. Ft.
Concrete in Foundations, Pile Caps, Footings, Abutments, Wing Walls, Boats and Parapets	8,300 Cu. Yds.
Reinforcement Steel	700,000 Lbs.
Protection of Railroad Traffic	Lump Sum

Contract documents may be seen and may be inspected by prospective bidders during office hours, after June 19, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Engineers, Ammann & Whitney, 185 Raymond Blvd., Newark, New Jersey, or 76 Ninth Avenue, New York 11, New York.

Contract documents will be furnished for $5.00 for each set upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

A set of Drawings and Supplementary Specifications of Contract No. 13, Grading and Drainage, City Line to Third Avenue, Elizabeth will be furnished for $5.00 for reference purposes upon application to the Authority, 65 Prospect Street, Trenton 8, New Jersey. The payment will not be refunded and the Drawings and Supplementary Specifications are not required to be returned.

* * *

CONTRACT NO. 38

The work to be performed under this Contract involves the construction of 18 bridge structures, reconstruction and paving of approach roads, and grading and drainage of a major interchange area.

Location of the work is in the Townships of Woodbridge, Borough of Carteret, and the City of Linden, New Jersey, at various sections of the northern 6.8 mile portion of Section 7 of the New Jersey Turnpike from Sta. 101 in Woodbridge to Sta. 252 in the City of Linden.

Maintenance of local vehicular and railroad traffic is involved. The completion date is July 1, 1951.

Principal items of work are:

Earth Excavation	250,000 Cu. Yds.
Borrow Excavation	24,000 Cu. Yds.
Open Foundation Excavation	19,000 Cu. Yds.
Concrete in Bridge Structures	26,000 Cu. Yds.
Structural Carbon Steel	10,200,000 Lbs.
Structural Silicon Steel	4,000,000 Lbs.
Steel in Concrete Bearing Piles	41,000 Lin. Ft.
Reinforcement Steel	3,000,000 Lbs.
Misc. Paving, Concrete and Bituminous	30,000 Sq. Yds.
Topsoiling	90,000 Sq. Yds.
Drain Pipe, Various Types and Sizes	17,500 Lin. Ft.

Contract documents may be seen and may be inspected by prospective bidders during office hours, after June 28, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, and at the offices of the Engineers, Fay, Spofford & Thorndike, 11 Beacon Street, Boston, Massachusetts, and 25 Livingston Avenue, New Brunswick, New Jersey.

Contract documents, exclusive of cross sections, will be furnished for $5.00 for each set upon application to the Authority. The payment will not be refunded and Contract Documents are not required to be returned. Plans showing grading cross sections may be examined at the office of the Authority or at the New Brunswick office of the Engineer.

* * *

CONTRACT NO. 39

The work to be performed under this Contract involves the construction of the substructures for the Trumbull Street Viaduct and the Humboldt Avenue Bridge and other incidental work in connection with the construction of the New Jersey Turnpike between Port Avenue and Humboldt Avenue in City of Elizabeth, Union County, New Jersey.

Principal items of work include:

Clearing and Grubbing	Lump Sum
Roadway Excavation, Earth	15,000 Cu. Yds.
Sanitary Sewer, Relocated	200 Lin. Ft.
Open Foundation Excavation	7,500 Cu. Yds.
Furnishing and Driving Steel Bearing Piles	3,500 Lin. Ft.
Cast-in-Place Concrete Bearing Piles	5,100 Lin. Ft.
Concrete in Pile Caps, Footings, Boats, Abutments, Wing Walls and Parapets	7,400 Cu. Yds.
Reinforcement Steel	910,000 Lbs.
Protection of Railroad Traffic	Lump Sum

Contract documents may be seen and may be inspected by prospective bidders during office hours, after June 27, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Engineers, Ammann & Whitney, 185 Raymond Boulevard, Newark, New Jersey, or 76 Ninth Avenue, New York 11, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

* * *

CONTRACT NO. 41

The work to be performed under this Contract involves the construction of four (4) steel and concrete structures, grading, railroad trackwork and incidental work in connection with the construction of the New Jersey Turnpike, Section 4, between Allentown and the Raritan River in Mercer and Middlesex Counties, New Jersey.

Principal items of work include:

Roadway Excavation	40,000 Cu. Yds.
Borrow Fill	1,500 Cu. Yds.
Concrete	11,000 Cu. Yds.
Reinforcement Steel	900,000 Lbs.
Structural Steel	2,100,000 Lbs.
Concrete Bearing Piles	5,000 Lin. Ft.
Bridge Drains	1,000 Lin. Ft.
Track Laying	3,000 Lin. Ft.
Track Raising	14,000 Lin. Ft.
Removing Tracks	1,750 Lin. Ft.
Ballast	4,000 Cu. Yds.

Contract documents may be seen and may be inspected by prospective bidders during office hours, on and after June 26, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Engineers, DeLeuw, Cather & Company, 106 Mercer Street, Hightstown, New Jersey.

* * *

CONTRACT NO. 54

The work to be performed under this Contract involves the construction of eight (8) steel and concrete bridge structures, cross street paving and incidental work in connection with the construction of the New Jersey Turnpike, Section 5, between Woodbury Heights and Hartford, in Gloucester, Camden and Burlington Counties, New Jersey.

Maintenance of local vehicular traffic is involved. The completion date is August 1, 1951.

Principal items of work include:

Excavation and Grading	27,000 Cu. Yds.
Concrete in Bridge Structures	10,000 Cu. Yds.
Reinforcement Steel	1,200,000 Pounds
Structural Steel	3,115,000 Pounds
Concrete Piles	30,000 Lin. Ft.
Timber Piles	14,000 Lin. Ft.
Metal Bridge Railing	2,800 Lin. Ft.
Pavement	2,500 Sq. Yds.
Topsoiling	12,000 Sq. Yds.
Pipe Conduit	2,500 Lin. Ft.

Contract documents may be seen and may be inspected by prospective bidders during office hours, on June 30, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Engineers, Gannett Fleming Corddry and Carpenter, Inc., 600 North Second Street, Harrisburg, Pennsylvania and Barrington Airport, Barrington, New Jersey.

Contract documents will be furnished for $5.00 for each set upon application to the Authority. The payment will not be refunded and Contract documents are not required to be returned.

* * *

Proposals for these contracts will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, N. J., until 11:30 o'clock (DST) in the morning on the following dates, at which latter time and place they will be publicly opened and read: Contract No. 32 on July 11; Contract No. 38 on July 14; Contract No. 39 on July 13, Contract No. 41 on July 12 and Contract No. 54 on July 18.

The receipt and opening of proposals is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposals a revised financial statement and a statement of plan and equipment.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the Contract on the outside and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) percent of the amount of the proposal but not less than $50,000 nor more than $200,000.00, and must be delivered at the above place on or before the hour named. Copies of the proposal form to be used for submitting proposals, of the form of proposal bond to be used, of the form to be used for financial statement and plant and equipment statement to be submitted with proposal, and special addressed envelopes are furnished in detailed form with the Contract documents.

Contracts will be awarded or proposals rejected within fifty (50) days from the date of opening proposals. The right is reserved to reject any or all proposals.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast
Chairman

(Continued on page 110)

CONTRACTORS

Watch this Section

for New Projects

Publish your announcement thru the "Proposals Section" of Engineering News-Record and get their bids.

U. S. Government
(Continued from page 109)

Department of Commerce, Bureau of Public Roads, June 28, 1950. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., July 28, 1950 for the construction of Project 26.3(M)5, Natchez Trace Parkway, Attala and Leake Counties, Mississippi. Length 19.423 miles. The approximate quantities of the more important items are as follow: 132,000 Gal. Tar, 73,000 Tons Type I-3 Hot Asphalt Concrete Pavement and 17,000 Cu. Yd Furnishing and Placing Loamy Topsoil. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 in cash or certified check made payable to the Treasurer of the United States will be required before the return within 15 days after the opening of bids. Plans, Specifications and proposal forms may be obtained from the Bureau of Public Roads offices, First National Bank Building, Florence, Alabama, or 1416 Columbia Pike, Arlington, Virginia. H. J. Spelman, Division Engineer. (850)

OFFICIAL PROPOSALS

Bids: July 12, 1950 (841)

State Road Work

STATE DEPARTMENT OF PUBLIC WORKS
BUREAU OF CONTRACTS & ACCOUNTS
ALBANY, N. Y.

Sealed proposals will be received by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., until ten-thirty o'clock A.M., Advanced Standard Time on WEDNESDAY, JULY 12, 1950, for projects in the following counties:

County	Deposit plans	Bid deposit	Type	Miles	Engineer's estimate
Bronx	$50	$40,000	Lighting and Misc. Work	4.04	$726,000
Erie	50	85,000	Conc. Conc. Hwy. 40' Wide Misc. Work, R. R. Sep. Structures Plate Girders 65' 8¾"; 64' 6"; 60' 11⅞" and 55' 1" Ea.	.985	1,585,000
Kings	25	34,000	Bit. Mac. M. M. Misc. Work	1.57	613,000
Madison	50	125,000	Conc. Conc. Part 2 at 25° Wide Conc. Fan Box Culv. 15'-5½" Ea. Conc. Box Culv. 20' Span & 2 Sp. Alpha I-Beam 18'-3 I Total. The project involves the use of Alpha Composite Construction which is patented and the royalty is $136.	3.18	2,350,000
Monroe	10	4,500	Traffic Signal System	2.30	81,000
	100	140,000	Bit. Conc. Opt. Conc. Fdn. & Appr. Conc. Type 2A on Drives, Appr. Conc. Type 2A Widen 48'-5" Alpha I Beam. The project involves the use of Alpha Composite Construction which is patented and the royalty is $154.	3.68	2,308,000
Nassau	50	65,000	Traffic Divider & Misc. Str. Conc. Conc. Pavement Var. Width	10.15	1,199,000
Wayne, Pa. & Sull., N. Y.	15	50,000	Asp. Conc. Type 1A Opt. Flex. Trust 3 Spans 225' Ea.	0.49	881,000

County	Contract No.	Name	Miles	Type	Deposit	Estimated cost of
Bronx	FABR 50-4	Bronx River Parkway Southerly Extension Proj. U. 979-10	4.84	Lighting and Misc. Work	$40,000 Plans $50.00	$726,000

Maps, plans, specifications, and estimates may be obtained at the office of the Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers in whose district the roads are located. The name and address of the District Engineers will be furnished on request and may be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated below. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award of, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to General Information for Bidders in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of State of New York, Commissioner of Taxation & Finance, for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated. The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: July 18, 1950 (848)

Strengthening & Repairs to Spans

SEALED proposals addressed to the President and Trustees of the Village of Ossining for
STRENGTHENING & REPAIRS TO WEST APPROACH SPANS OF SECOR ROAD will be received at the office of the Village Clerk, in the Municipal Building, Ossining, N. Y., until o'clock P.M. prevailing time on TUESDAY EVENING, JULY 18, 1950, at which time they will be publicly opened, read and compared.

Copies of the plans, form of proposal, specifications, bond and contract may be obtained from FRANK W. BOCKER, SUPT. of STREETS, 5 Brandreth Street, Ossining, N. Y. Telephone Ossining 2-2579, upon deposit of Five ($5.00) Dollars which will be refunded upon the return of the plans in acceptable condition within fifteen days of the bidding date.

Consideration to awarding this contract will be given on the basis of the time of completion.

The right is reserved to reject any or all bids.

By order of the President and Trustees, Village of Ossining, N. Y.

FREDERICK T. SCRIMA, Village Clerk
Date: Ossining, N. Y.
June 29, 1950

Bids: July 14, 1950 (P5491)

Removal of Existing Bridge Structure

HIGHWAY BRIDGE, LITTLE RIVER
ROCKFORD, BLOUNT COUNTY, TENNESSEE

Sealed bids for the removal of the existing bridge structure across the Little River at the South edge of the town of Rockford, Blount County, Tennessee, and for the construction of a new bridge to replace the same site will be received until 2:00 P. M. July 14, 1950, in the office of the County Judge, Court House, Maryville, Tennessee, and then and there publicly opened and read aloud.

The work shall include:

1. The dismantling of the present bridge structure.

2. The disposal and the removal of the material in this structure in a manner satisfactory to or as directed by the Engineer.

3. The construction of a new bridge.

The principal items of new work to be done and materials to be furnished and provided are approximately:

Substructures
135 Cu. Yds. of Concrete, Class "A"
75,775 Lbs. of Reinforcing Steel
130 Lin. Ft. of Steel "H" Piling
New Superstructure
180 Cu. Yds. of Concrete, Class "A"
42 Cu. Yds of Concrete, Class "S"
193,462 Lbs. Reinforcing Steel
7,350 Lbs. of Metal Handrail
6,307 Lbs. of Expansion Rollers, Forged and Annealed Steel
5,579 Lbs. of Expansion Plates, Etc.
Approaches
1,400 Cu. Yds. of Embankment (In Place)
136 Cu. Yds. of Rip-Rap

Copies of these Specifications and Drawings may be obtained at the office of the County Engineer, Court House, Maryville, Tennessee, upon payment of twenty-five ($25.00) dollars per copy which will be refunded when the copy is returned in good condition.

Each proposal or bid must be accompanied by a cashier's or certified check on a duly organized Bank made payable to Blount County, Tennessee, or a bid bond executed by the bidder and a Surety Company authorized to transact business in the State of Tennessee, in the sum of not less than five per cent (5%) of the total amount of the bid. Said check or bond will be returned to the unsuccessful bidder as soon as the contract has been awarded, or all bids rejected, and to the successful bidder as soon as he has executed the contract and furnished a liability and performance bond in the amount of fifty per cent (50%) of the contract price, same having been approved by the County Attorney and after the contract has been executed by the County.

All bids must be made out on the proposal as required by Chapter 135 of the Public Acts of 1945 of the General Assembly of the State of Tennessee. Bidders name and license number must be placed on the sealed envelope containing the bid.

All bids must be made on the proposal form found in the documents. No interlineations, additions or deletions shall be made in the proposal form by the bidder.

Time of the completion of the work is the essence of this contract and the number of working days required by the bidder to do and complete the project shall be stated on the proposal form where so called for. The successful bidder shall be required to complete the work within the time stipulated by him. Liquidated damages for delays shall be thirty ($30.00) dollars per day.

The Blount County Highway Commission reserves the right to waive any informalities in or to reject any or all bids or to accept any bid which they deem to be the most favorable to the interests of the County.

GEO. D. ROBERTS,
County Judge,
Blount County, Tennessee

Bids: July 10, 1950 (8254)

Elevated Steel Water Tank

Sealed bids will be received until o'clock A. M., July 10, A.D., 1950, in the office of the City Auditor and Clerk of Fort Lauderdale, Florida, for Elevated Steel Water Tank for the Waterworks System.

This work involves the installation of one (1) 500,000 gallon elevated steel water tank of tubular tower construction.

Bidding blanks may be obtained from the office of the City Engineer. Plans and Specifications of the work are on file in the office of the City Engineer, and copies thereof may be obtained at the office of the City Clerk upon payment of $25.00 for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment, and any non-bidder, upon so returning his set, will be refunded $15.00.

A certified check for 5% of the bid, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal as evidence of good faith and responsibility of the bidder. This check shall be retained by the City of Fort Lauderdale as liquidated damages should the bidder fail to refuse to enter into a contract with the City of Fort Lauderdale for the execution of the work embraced in the proposal in the event the proposal of the bidder be accepted.

The City of Fort Lauderdale reserves the right to reject any or all bids.

P. D. RANKINS
City Manager

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS received by July 10th at the New York Office 330 W. 42 St., N. Y. 18, will appear in July 20th issue subject to space available

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WANTED
CONSTRUCTION ENGINEER-SUPERINTENDENT

for Contracting firm specializing in all types of sewer construction. Must know costs, and be able to lay out and supervise work. Reply, giving experience, age, date available, salary desired.

Good opportunity for an aggressive man, willing to work, and looking to the future. Bonus Participation

UNITED FOUNDATION CORP.
RIDGELY, WEST VIRGINIA
Phone 6672

Experienced structural steel detail
Draftsmen and Checkers

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P-7892, Engineering News-Record
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Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 30B tunnel front attachment.
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Lorain 75B, 1¼-yd extended lip, 1¼-yd LBS #2260.
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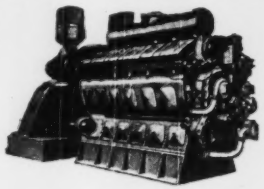

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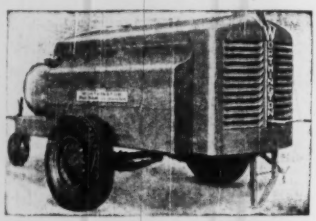

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3 Jaeger 3½ Yd Hi-Discharge Transit Mixers New 1949. Mtd on Mack Mod ESQW Trucks
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3 Athey FB: two EB 2 way dump wagons.

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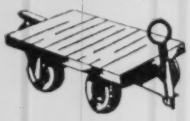

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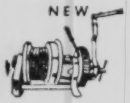

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1½"x20 ft	8.75	3"x10 ft	9.50
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1½"x15 ft	6.00	4"x10 ft	20.00
1½"x20 ft	8.00	4"x15 ft	31.75
2"x10 ft	6.50	5"x10 ft	37.50
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Cotton jacket, rubber lined hose suitable for water supply and discharge service. Constructed exactly like Fire Department hose. Light in weight. For pressures to 200 lbs. Attached to each length are Iron Pipe Thread Couplings.

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¾"x25 ft	8.75
¾"x50 ft	16.00
1"x25 ft	10.50
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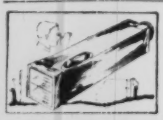

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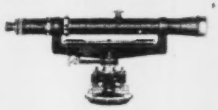

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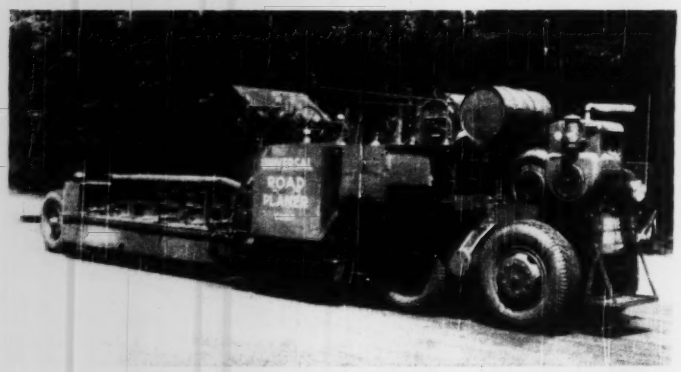


Heater Planer Improves and Maintains Bituminous Pavements

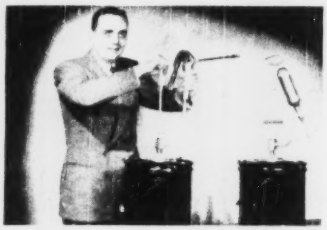
Heater Planer is designed to heat and cut to a uniform plane all rough and uneven bituminous wearing surfaces. This is accomplished by heating and planing in one operation and windrowing the planed-off material so that it can be easily and quickly removed. Heating hood is 50 in. wide by 100 in. long and is equipped with 8 oil burners. Adjustments are provided to angle the cutting blades for crown or shoulder key cutting. Working speeds range from 10 fpm. up. A consolidating blade windrows planed material. Front and rear wheels have some tread, enabling machine to cut close to curb. Overall length of the Heater Planer is 35 ft 5 in.—UNIVERSAL ROAD PLANER CORP., 83 S. HIGH ST., COLUMBUS 15, OHIO.

Adjustable Steel Form Clamp

Comprised of stake and cross piece, the Built-clamp can be used for setting up wood forms for building foundations. It is adjustable for widths from 4 to 8 in. for heights to 24 in., and for batter from vertical to any angle. Standard steel stakes are used, and are said to prevent kicking out of forms at bottom. No special spreaders or wall ties are required. No tools are required to adjust clamps as a locking level is part of each clamp. An adjustable cross-bar can be used with the regular stakes to set up any building foundation up to 36 in. in height and to 10 in. in width.—PACIFIC ENGINEERING SALES CO., 215 W. 54th ST., LOS ANGELES 13, CALIF.

Tandem-Axle Trailer

Heavy-duty tandem-axle low-bed trailer has a 40-ton rated capacity. Available with flat or drop-type platform, the new trailer is fitted with eight 20-ply 10.00x15 tires. These tires are rated at 30,960 lb capacity under the new 20-mph ratings issued by the Tire & Rim Assn. Gross load is distributed with 37,440 lb on king pin and 50,960 lb on rear axles. Total trailer weight is 11,200 lb. Walking beam supporting rear axles gives maximum horizontal and vertical oscillation of each wheel (about 10 in. both ways).—LA CROSSE TRAILER CORP., LA CROSSE, WIS.



Portable Lubricator

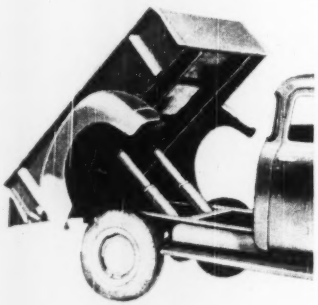
One-hand-operated greasing outfits are available in two models. The Dyn-O-Lube (Model 7185-A) features the Dyn-O-Mite gun. This gun weighs 2 lb. and holds enough lubricant to grease up to 55 bearings. The Dyn-O-Pistol (Model 7185-B) has a gun with a 9-oz capacity. Loading pump is mounted in a rigid steel cover which fits the top of any standard 25 or 35-lb. lubricant container. A few strokes of the pump handle fills the gun. The gun is then uncoupled and is ready for use.—ALEMITE DIV., STEWART-WARNER CORP., DEPT. G, 1650 DIVERSEY PARKWAY, CHICAGO 14, ILL.

Vertical Centrifugal Pump

Hydro-Line pump serves where net positive suction head or installation space is limited. It consists essentially of a vertical close-coupled rotative shaft turbine pump enclosed in a steel jacket or barrel. Capacities up to 5,000 gpm are obtained with this pump, maximum head is 1,500 ft. All types of drives are available.—PEERLESS PUMP DIV., FOOD MACHINERY & CHEMICAL CORP., 301 W. AVE. 26, LOS ANGELES 31, CALIF.

Welding Transformer

Model 400E welding transformer has a 70 to 585 amp welding range. Rated 400 amps at 60% duty cycle, it retains a full 75-v open-circuit voltage. Ball-bearing coil-moving screw provides quiet operation and easy adjustment.—A. O. SMITH CORP., P. O. BOX 584, MILWAUKEE 1, WIS.



Truck Conversion Kit

Engine-driven low-mount Tipster converts pick-up trucks into dumping units. Main elements are Clutch-type hydraulic pump, steel understructure for mounting under the pick-up body, and two-cylinder hydraulic hoist rams. The Hydro-Clutch pump is operated by a dashboard-mounted control. Shipped as an entire unit, the Tipster accessory weighs approximately 400 lb.—HERCULES STEEL PRODUCTS CORP., GALION, OHIO.

Aluminum Scaffold Clamp

Pipe and clamps for erection of lightweight scaffolds are now made of a new aluminum alloy. The line is

(Continued on page 122)

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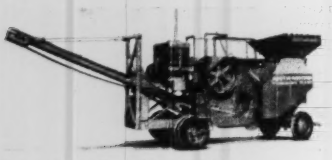
comprised of four types of clamps with load capacities comparable to steel. Use of Acrominum alloy results in reduced erection costs, cheaper transportation costs, and less loss of pipe due to distortion as the material is highly flexible.—ACROW, INC., 420 LEXINGTON AVE., NEW YORK 17, N. Y.



Portable Crushing Plant

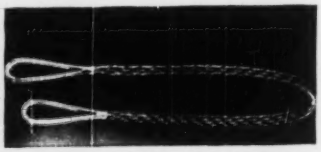
Single pass type plant is designed for fast, economical production of crushed rock or gravel where extreme accuracy in grading to size is not required. The Model 61 is especially suited to the maintenance needs of town and county road departments. This lightweight, portable unit features simple design and sturdy construction. — AUSTIN WESTERN CO., AURORA, ILL.

Crane Has 25-Ton Capacity

Rubber-tired Drew Loram machines, rated at 25 ton lifting capacity on outriggers at 10-ft radius, are available in two models. Both the MC 504 and MC 504W Moto-Cranes were developed by modifying the Loram 50 Series turntable and mounting it on heavy-duty rubber-tired carriers. Turntable is powered by a gasoline engine. Power is delivered through a Twin Disc hydraulic coupling power take-off. Attachments available are: Crane boom is 100-ft length, 3-sheave boom head which permits reeving 5 parts of hoist line without top block; jitting crane; shovel booms in 21 or 19-ft length. — THE DREW SHOVEL CO., LORAIN, OHIO.

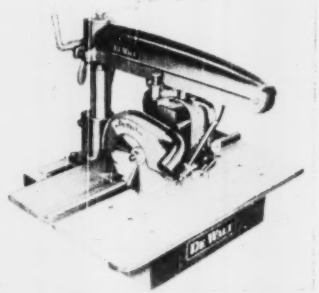
Cooling, Heating Unit

Compact packaged summer cooling and winter heating air-conditioning unit is controlled by one thermostat. The unit furnishes automatic gas heating in winter and summer cooling by hermetically sealed refrigeration equipment. The 38B Weathermiser is produced in three models—3 hp cooling and 110,000-150,000 btu heating; 5 hp cooling and 110,000-150,000 btu heating; and 5 hp cooling and 165,000,000-200,000 btu heating. Cooling and heating elements are the same. — CARRIER CORP., SYRACUSE, N. Y.



Flat-Braided Sling

This sling is designed to provide a relatively wide, flat bearing surface with sling thickness held to a minimum. The Drew 14-part Type-I CT sling is fabricated from one endless wire rope. Sling ends terminate in natural loops fitted with Crescent thimbles. It is made to order in length and safe-load capacity required. — MACWHYTE CO., 2930 FOURTEENTH AVE., KENOSHA, WIS.



Radial-Arm Power Saw

Light weight and recessed-cabinet-top design permits removal of saw unit, table, and table base from cabinet for using machine as a portable power saw. Weight of the entire unit is 115 lb. The Model GS is equipped with a ½ hp motor, can cut 2-in.-thick material, crosscut 12 in. wide, and rip to the center of a 43-in. panel. — DEWALT, INC., LANCASTER, PA.

Concrete Form Clamp

Taper-Eve continuous-rod concrete form clamp features: Fast installation and adjustment; easily removed from concrete because of its tapered construction; eliminates twisting and unscrewing of rods imbedded in concrete; does not require reassembly after stripping; eliminates threaded tie rods; and tapered hole is grouted by filling from large end. The Taper-Eve is made in one length which is adjustable for wall widths ranging from 6 to 14 in. By tieing standard she bolts onto the end of the rod.

(Continued on page 124)

ALUMINUM

SOLVES MANY TOUGH PIPING PROBLEMS

In recent years, aluminum and aluminum alloys have grown rapidly in importance as piping materials in many industries, including manufacturers of chemicals, foods, soaps and cosmetics, petroleums, textiles, explosives, rubber, paints and varnishes.

There are many reasons for this. Aluminum offers high strength, light weight, passivity when in contact with various corrodents, resistance to corrosion, absence of sparking characteristics, and low cost in comparison with other metals that have the same inherent qualities.

For example, in chemical plants, aluminum offers great resistance to corrosion, and it is passive to a large number of corrosive fluids where other metals tend to catalyze. Its corrosion products do not cause discoloration. This is important where maintenance of product color is of primary importance.

In food plants, aluminum resists the corrosive action of most food products such as acetic and nitric acids, oils, milk, beer, and fruit juices. It protects against color contamination and helps prevent rancidity.

In the petroleum industry, aluminum piping resists the corrosive action of hydrogen sulfide, sour crude oils, mineral oils and liquid fuels.

Aluminum piping materials are available in a variety of alloys including 2S, 3S, 61S, 63S, and Alclad 3S. Each is particularly suited for certain applications. And, since the physical properties vary with each alloy used, individual applications should be analyzed carefully to determine the correct alloy needed for the job.

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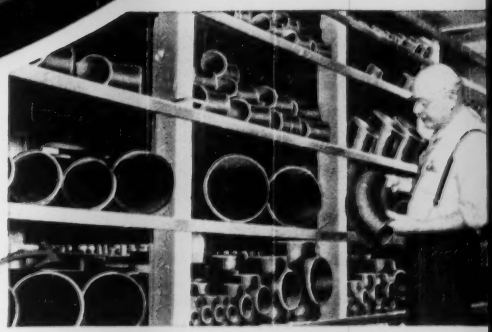

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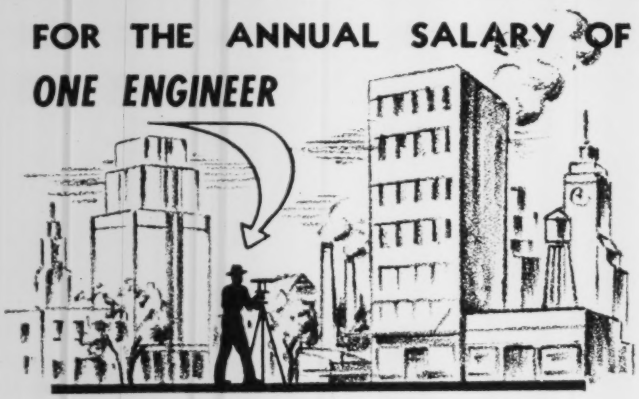

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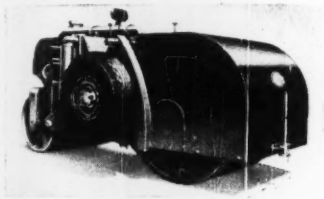
it is possible to form up to a 29-in. wall. By tieing two tapered rods together with a coupling, it is possible to form walls up to 46-in. thick. — H. J. KRUEPER CO., 535 S. CLARENCE ST., LOS ANGELES 33, CALIF.



Five-Ton Tandem Roller

Retractable-wheel self-contained roller has a full 5-ton weight. The retractable wheel permits its being towed at normal highway speeds. Two hydraulic cylinders raise and lower trailing wheels. When towed, the wheels ride 9 in. off the ground. Power for the roller is supplied by a 4-cyl gasoline engine.—HUBER MFG. CO., MARION, OHIO.

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(Continued on page 126)

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Years of the toughest rock digging have proved the P&H Diesel-Electric from every standpoint . . . dependable operation . . . less maintenance . . . rock bottom tonnage costs.

This simplified P&H Diesel-Electric shovel is made possible by the exclusive P&H Magnetorque Hoist Drive. Hoist generator, hoist motor, slip friction clutch and other mechanical devices are completely eliminated. Magnetorque is only one of many P&H Added Values. Ask for Bulletin X85-DE.

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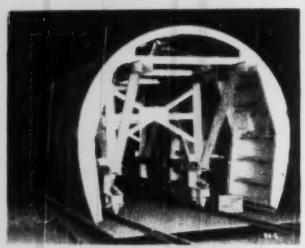

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proof fiber partitions. It is designed for installation in ceilings and floors, between beams, steel girders, or trusses; under concrete floors and ceilings; over concrete slabs; and under or over radiant-heating panels.—INFRA-INSULATIONS, INC., 10 MURRAY ST., NEW YORK, N. Y.

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Instant-lighting hand torch features use of replaceable cartridge refills. The torch lights instantly without preheating; gives a clean, hot flame of 3,660-deg F.; and weighs 2¼ lb. The Bernz LP torch will burn in any position, including upside down. It operates most efficiently on propane fuel.—OTTO BERNZ CO., INC., 280 LYELL AVE., ROCHESTER 6, N. Y.

New Product Briefs

Super-rated v-belts incorporate a chemically produced fiber of high strength, low stretch, and excellent shock-absorbing qualities. The Goodyear HyT belt features include minimum stretch, resistance to shrinking, water and mildew resistance, and increased horsepower rating.

Variable-speed transmission for fractional-horsepower motors features automatic speed-locking device which keeps pulley in desired position. Maker: Frazier & Son, Belleville, N. J.

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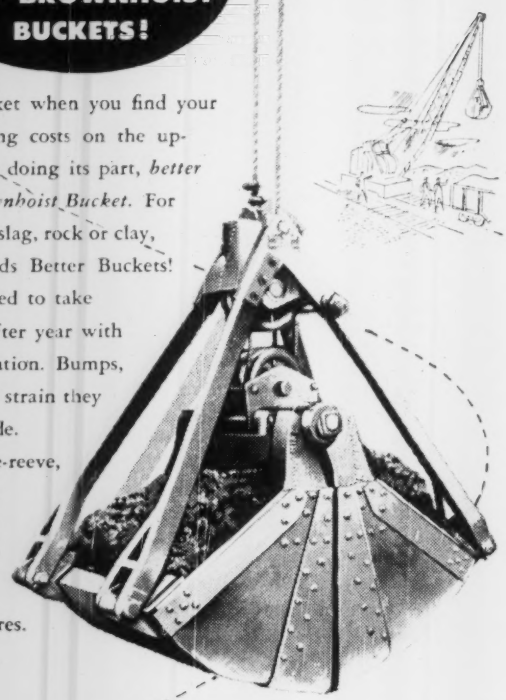

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Manufacturers' Publications

Soil Stabilizers—Job-data folder (4 pp) describes applications of the P&H single-pass soil stabilizers. The folder covers the use of the machine in road and airport work in many states and foreign countries. Feature of the folder is a large cutaway drawing explaining operation of the machine.—HARNISCHFEGER CORP., STABILIZER DIV., 4404 W. NATIONAL AVE., MILWAUKEE 14, WIS.

Weather-Resistant Coating — Roof Coating, a corrosion and weather-resistant roof coating and waterproofing for foundations, walls, and floors, is described in Catalog 501-R. Also described are Styx liquid roof paint, Styx mastic roof coating, Styx plastic roof cement, C-4 asphalt primer, Tite roof paint, Asbestite roof coating, Plastite roof cement, C-4 Blind Nailing cement, and Seal Tight foundation water proofer. — COOPERS CREEK CHEMICAL CORP., WEST CONSHOHOCKEN, PA.

Fenestra Steel Windows—New bulletins describe three types of windows. One describes the Fenestra steel basement window; another describes the Fenestra steel outside-inside trimmed residence casement window unit; and the third describes the Fenestra steel utility window. Each window is described in detail, and information is provided on proper installation procedures.—DETROIT STEEL PRODUCTS CO., 5141 GRIFFIN ST., DETROIT 11, MICH.

Silica Graphite Paint—Three new bulletins describe flake silica graphite paint and primer for protecting metal structures. These bulletins (V-53, V-55, and V-56) describe silica graphite completely listing its principal features and explaining how it protects both exterior and interior surfaces.—JOSEPH DIXON CRUCIBLE CO., PAINT SALES DIV., JERSEY CITY 5, N. J.

Ryerson Catalogs—Eight-page bulletin describing specialized steel service for contractors features Hi-Bond reinforcing bars. Other products listed include electric-welded wire fabric, steel forms for concrete joist construction, steel spirals for reinforcement, expanded metal, reinforcing accessories, caisson rings, and others. Also available, is a 4-p bulletin on two high-performance alloy steels supplied in heat-treated condition and ready to use. Ryerome

(Continued on page 130)

More mixing, less fixing with drum on TIMKEN® bearings

THIS Rex 4½ yd. Hi-discharge Moto-Mixer keeps its nose to the grindstone to speed your construction jobs. No time-wasting bearing breakdowns to worry about.

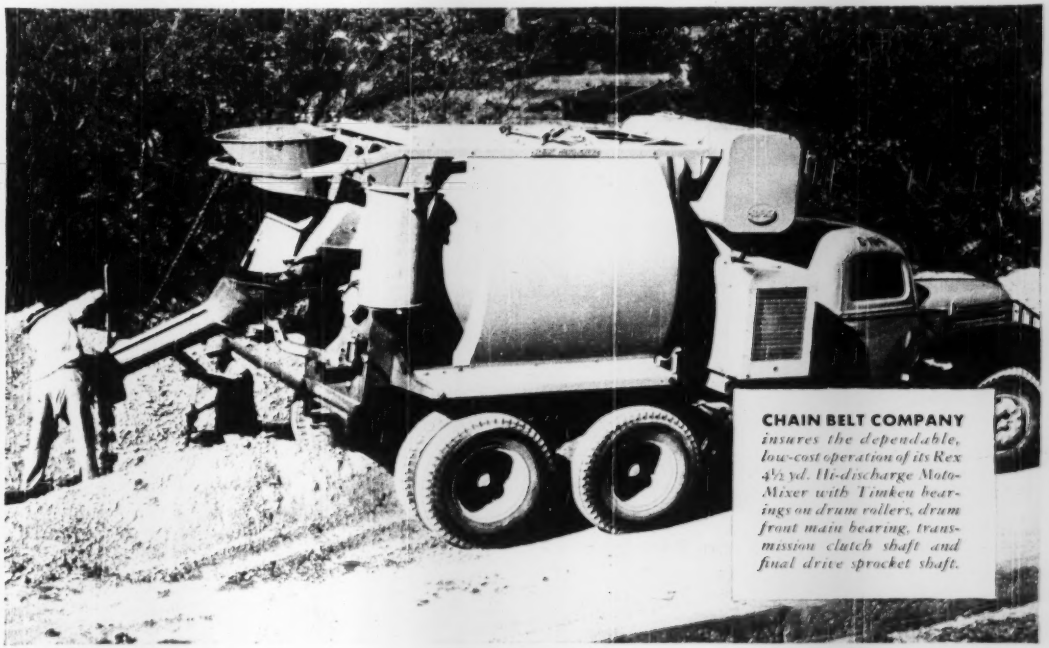
It's equipped with Timken tapered roller bearings at four vital points—mixing drum front main bearing, drum rollers, transmission clutch shaft, and transmission final drive sprocket shaft.

Timken bearings have the tapered construction that takes the drum's radial, thrust, and combination loads. They have line contact between rollers and races to carry the heaviest loads the drum can dish out. They can be expected to last the life of the mixer because they are: (1) engineered for the job, (2) made of Timken fine alloy steel for extra toughness and wear-resistance, and (3) manufactured to amazing limits of accuracy.

Timken bearings keep moving parts in rigid alignment, reduce wear and maintenance costs. They permit tighter closures to retain lubricant better and cut lubrication time. In heavy duty service like this, they reduce friction more than any other bearing.

Make sure the machines you build or buy have these Timken bearing advantages. Always see to it that your bearings are stamped with the trademark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



CHAIN BELT COMPANY *insures the dependable, low-cost operation of its Rex 4½ yd. Hi-discharge Moto-Mixer with Timken bearings on drum rollers, drum front main bearing, transmission clutch shaft and final drive sprocket shaft.*

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Wide area contact between roll ends and rib of the cone prevent Timken rollers from skewing. Result: bearings roll easier, last longer.

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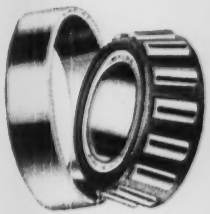

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Howard Green, Business Manager

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and Nikrome M are suitable for heavy duty axles and shafts, gears and pinions, studs and bolts, and similar application. Data tables include minimum mechanical properties, test results, properties at high temperatures, and machinability ratings.—JOSEPH T. RYERSON & SON, INC., BOX 8000-A CHICAGO 80, ILL.

Flash Mixers; Flocculators—Bulletin (8 pp) describes the Dorreo flash mixers and flocculators. It contains photographs and complete descriptions of these units, as well as listing the advantages claimed for them. Designed primarily for pre-treatment of water supplies, they are also used in sewage treatment. The last two pages of the bulletin cover various types of Dorr sedimentation units and illustrate by photographs and drawings how the flocculator operates in combination with these units.—THE DORR CO., INC., BARRY PLACE, STAMFORD, CONN.

Concrete Cutting—Treatise on subject of cutting concrete with diamond abrasive wheels has been published in catalog form. The treatise discusses development of this type of equipment, the various Felker DeMet concrete-cutting machines, advantages claimed for concrete cutting, methods of cutting concrete, and recommended applications. The bulletin is thoroughly illustrated with job photographs.—FELKER MFG. CO., TORRANCE, CALIF.

Allis-Chalmers Tractors—Pocket-size catalog (20 pp) discusses the importance of using equipment designed to fit job requirements. The catalog contains specifications and a brief description of each A-C power unit, wheel tractor, and crawler tractor.—ALLIS CHALMERS MFG. CO., TRACTOR DIVISION, BOX 512, MILWAUKEE, WIS.

Translucent Building Panels—Corrugated plastic panels for use in construction are described in a 4-color folder, illustrating colors in which the Corrulux panels are produced. Text describes principal features of the panels, and illustrations show several typical uses.—CORRULUX CORP., P. O. BOX 6524, HOUSTON 5, TEX.

Alloy-Steel Tools—Safe-T-Kut tools listed in Bulletin 2-SK include hand chisels, pneumatic and electric hammer chisels, center punches, paving breaker steels, and back-out punches. The bulletin describes the Delsteel alloy from which the tools are produced, inspection procedures, and special designs.—DELAWARE TOOL STEEL CORP., WILMINGTON, DELA.

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The discharging mechanism is powered by a 21 H.P. gas engine. It is located under the tank in an enclosed compartment mounted well forward to prevent the entrance of harmful dust. Self-lubricating twin screws convey the load to the rear—dump anything up to 1 inch in diameter at 5 barrels per minute. Screws may be operated singly or together. Triple control levers allow operation from engine compartment, or from either side of the rear of the Trailer. 2 baffles (within the tank) prevent load shifts. Manholes on the tank top, located ten feet apart, provide fast, easy loading. Curbside ladder allows easy access to manholes.

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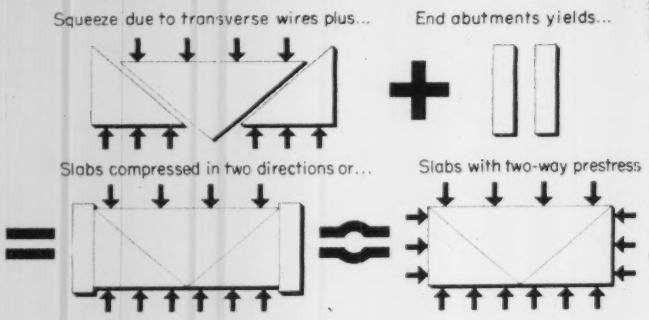
Squeeze due to transverse wires plus...
End abutments yields...
Slabs compressed in two directions or...
Slabs with two-way prestress

Progress report: Prestressed Airstrips

When Eugene Freyssinet put down the world's first prestressed concrete runway at Paris' Orly Airport nearly two years ago, he claimed that the airstrip could handle any airplane then known, and most of the biggest ships the future could bring.

Freyssinet's 1,400-ft runway, only 6½ in. thick (ENR Sept. 16, 1948, p 104) hasn't actually had to take any 150-ton planes. But its performance makes it appear that its designer wasn't just boasting.

In fact, the only trouble with the strip is that it is too strong. It was designed to meet the challenge of bigger and bigger planes—and the challenge hasn't materialized. Biggest ships handled so far are about 70 tons (mostly Constellations). So the French feel it's a little pointless to design runways of this enormous strength—particularly since the prestressed strip cost about 30% more per meter to build in France than a conventional strip.

• Successful experiment—On the other hand, the runway is admittedly experimental, and as such it is an apparent success.

Freyssinet himself complained of the materials and machinery he had to use to do the construction and admitted that no subsequent runway would be constructed by the same methods. The Orly runway, 200 ft wide, was built of one-meter-square precast concrete blocks (an admittedly clumsy construction procedure in view of French lack of adequate handling machinery). It was prestressed by tensioning wires placed between blocks and anchored at either side of the runway. The entire runway was divided into several triangular sections by joints at 45 deg. to the longitudinal axis of the strip, to make possible a two-way prestress, although cables were laid in only one direction (transversely). The longitudinal prestress resulted from the fact that the ends of the runway were confined between reaction abutments and rollers in the joints permitted the triangular sections to slide past each other horizontally with little friction.

These rollers, in fact, seem to be the one kink that has developed in the strip. They have shown a slight tendency to work loose and pop up out of the joint. This could easily have been overcome by having the edges of the joint lap over tops of the rollers—and that would be done if another such strip were ever built.

• How it's done—When the runway was put down, the transverse cables were laid between the precast blocks. They consisted of 30 parallel 5-mm-dia. steel wires with an average ultimate tensile strength of 220,000 psi. At the edge of the strip, the 30-wire cables were separated into three strands, which were anchored by pinching them between Freyssinet-patented interlocking cones.

After the cables were placed, mortar was cast in the joints between slabs—lateral joints being packed full, but longitudinal joints were only filled to the bottom of the cables.

The cables were then tightened in four steps. The 240 westernmost cables were tightened first to a tension of 58,000 psi; the 180 easternmost cables were brought to the same tension; the remaining cables in the center were stressed; then all cables were jacked to a tension of 128,000 psi to impart a uniform 475 psi stress to the concrete.

The two abutments at either end of the strip are made of concrete prestressed both laterally and longitudinally. They are 200 ft long, running the full width of the runway, 6 ft wide and of varying thicknesses. They are anchored by 12 concrete buttresses, acting in tension, curving 26 ft under the strip.

Prestressing buttress cables perpendicular to the axis of the strip are anchored at the bottom of the buttresses in concrete injected under pressure.

• Strength tested—Some evidence of the tremendous strength of the paving, despite its thinness, came in recent tests. Under a 300,000-lb load applied to a circle 24 in. in diameter, prestressing was lowered from the normal 475 psi to 142 psi. before cracks appeared. (The article in ENR Sept. 16, 1948, p 104, erroneously reported the prestress in the concrete as 4,750 psi instead of 475.)

The cracks disappeared completely when the prestressing cables were returned to normal tension.

Obviously, the strip isn't getting much of a workout under present service conditions.

• Reasons for cost—French engineers cite three main reasons for the extremely high cost of prestressing such strips in their country.

1. French raw steel prices are roughly 25% higher than average world prices, thanks to cartelization and protection of markets. And the cables used in prestressing are made by only one company—which uses its monopoly position to charge 300% more than the French price for comparable types of steel.

And there are about 62.2 lb. of steel per cu yd. of concrete in the Orly strip.

2. Conventional French landing runways rarely exceed 12.5 in. in thickness—enough to handle most air traffic. The relative cost of prestressed strips, therefore, is much more than it would be in the U. S. (where landing strips 24 in. thick have been built).

3. French heavy construction machinery is still primitive compared to the U. S. contractor's tools. This explains why the Orly strip was built out of precast blocks which demanded a lot of hand labor.

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"IRON-CLAD" means 4 to 6 Times Longer Floor Life

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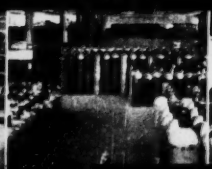

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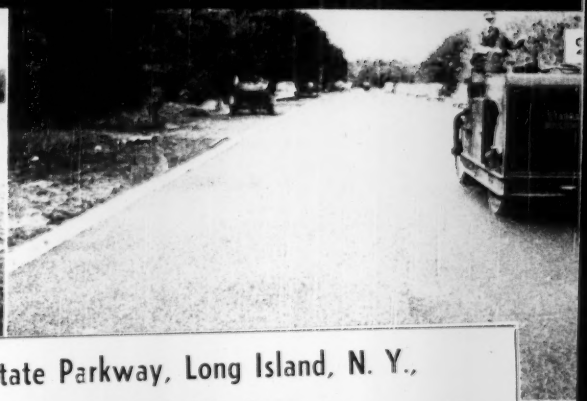
CORROSION RESISTANT

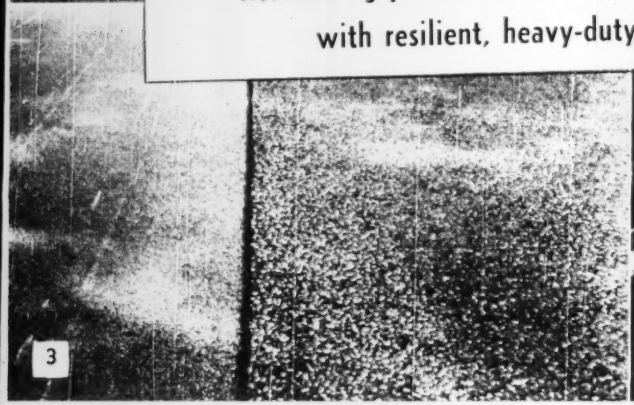
EASY-TO-CLEAN

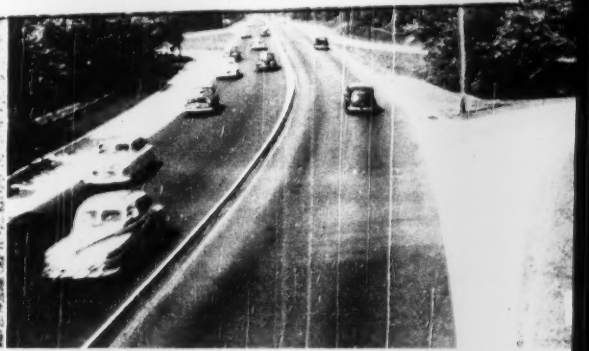
NON-SLIP SURFACE

Where traffic hits a peak of 60,000-vehicles-a-day



Resurfacing part of Southern State Parkway, Long Island, N. Y., with resilient, heavy-duty Texaco Asphaltic Concrete





PHOTOGRAPHS

1. Laying the wearing surface of a two-course Texaco Asphaltic Concrete pavement on Southern State Parkway.

2. Note the skid-resistant texture of this Texaco Asphaltic Concrete pavement, which assures maximum safety to motorists.

3. The 1½-inch binder course is shown at the right and 1-inch wearing surface at the left in this photo.

4. The Texaco Asphaltic Concrete on Southern State Parkway was laid by the Standard Bitulithic Company, Baldwin, N. Y.

Southern State Parkway is part of a system of beautifully landscaped parkways, which bring Long Island's fine State parks, bathing beaches and other attractions within easy reach of New York City. During the summer, Sunday and holiday traffic on Southern State Parkway reaches 60,000 vehicles in 24 hours, with a high of 40,000 cars a day on weekdays.

Last fall, a 2½-mile section of Southern State Parkway, beginning at the New York City line, was resurfaced with a two-course Texaco Asphaltic Concrete pavement, consisting of 1½-inch binder course and 1-inch wearing surface. Its construction on an important part of this popular parkway helps explain why hot-mix, hot-laid asphaltic concrete paving has been chosen in the past by road builders throughout the country to serve exceptionally heavy traffic.

Wherever main highways, busy city streets and major airports call for pavement capable of withstanding unusually hard wear, resilient Texaco Asphaltic Concrete's rugged durability and low maintenance cost make it a sound choice.

Complete information on Texaco Asphaltic Concrete and all other types of asphalt construction for streets, highways and airports can be secured without obligation by writing our nearest office.

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